

## **EXHIBIT 29**

**Expert Reply Report of Richard D. Kahlenberg, dated June 27, 2018**

IN THE UNITED STATES DISTRICT COURT  
FOR THE MIDDLE DISTRICT OF NORTH CAROLINA

STUDENTS FOR FAIR ADMISSIONS,  
INC.,

PLAINTIFF,

v.

CIVIL ACTION NO. 1:14-CV-00954

UNIVERSITY OF NORTH CAROLINA,  
ET AL

DEFENDANT.

EXPERT REPLY REPORT OF RICHARD D. KAHLENBERG

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## I. Executive Summary

In my opening and rebuttal expert reports, I outlined numerous ways in which the University of North Carolina at Chapel Hill (UNC) could use race-neutral alternatives to achieve the educational benefits of racial, ethnic, and socioeconomic diversity.<sup>1</sup> At the same time, UNC's proffered expert witnesses, Professors Caroline M. Hoxby, Bridget Terry Long, and Mitchell J. Chang, submitted reports suggesting (among other things) that race-neutral strategies would be unworkable.<sup>2</sup> In this reply report, I refute their assertions, focusing primarily on their rebuttal reports.<sup>3</sup>

My opening and rebuttal reports reached three conclusions: (1) both experience and academic research demonstrate that selective colleges and universities can maintain or increase diversity through race-neutral strategies without sacrificing academic standards; (2) UNC failed to fully consider and evaluate numerous race-neutral strategies, including increasing socioeconomic preferences, increasing financial aid, utilizing geographic diversity, eliminating legacy preferences that favor non-minorities, increasing recruitment, increasing community college transfers, ending early admissions, and developing partnerships with disadvantaged North Carolina high schools; and (3) simulations of UNC's data demonstrate

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<sup>1</sup> See Report of Richard D. Kahlenberg, Students for Fair Admissions, Inc. v. University of North Carolina, et al., January 12, 2018; Rebuttal Report of Richard D. Kahlenberg, Students for Fair Admissions, Inc. v. University of North Carolina et al., April 6, 2018.

<sup>2</sup> See Report of Caroline Hoxby, Students for Fair Admissions, Inc. v. University of North Carolina, et al., January 12, 2018; Rebuttal Report of Caroline Hoxby, Students for Fair Admissions, Inc. v. University of North Carolina, et al., April 6, 2018; Report of Bridget Terry Long, Students for Fair Admissions, Inc. v. University of North Carolina, et al., January 12, 2018; Rebuttal Report of Bridget Terry Long, Students for Fair Admissions, Inc. v. University of North Carolina, et al., April 6, 2018; Report of Mitchell Chang, Students for Fair Admissions, Inc. v. University of North Carolina, et al., January 12, 2018; Rebuttal Report of Mitchell Chang, Students for Fair Admissions, Inc. v. University of North Carolina, et al., April 6, 2018. In my reports, I also reference two experts for the Defendant-Intervenors. See Report of Uma Jayakumar, Students for Fair Admissions, Inc. v. University of North Carolina, et al., January 12, 2018; Report of David Cecelski, Students for Fair Admissions, Inc. v. University of North Carolina, et al., January 9, 2018.

<sup>3</sup> In formulating my reply report, I have not relied upon any data or material other than the material produced with UNC's expert reports, the material cited in this report and my rebuttal report, and the data and materials identified in my opening report.

that several workable race-neutral alternatives exist. Nothing in the Hoxby, Long, and Chang reports undermines these conclusions.

Highlights of my reply report are as follows:

- UNC's experts are unable to dispute the substantial body of scholarship and experience finding that a variety of viable race-neutral alternatives are available to highly selective institutions such as UNC. While UNC's experts can cite studies finding that income preferences alone are unlikely to produce sufficient racial diversity, approaches that consider additional socioeconomic factors, such as family wealth and neighborhood and school poverty concentrations, are successful. Indeed, the most recent scholarship in this field emphasizes that such multi-faceted socioeconomic preferences work much better than income preferences alone.
- UNC's witnesses continue to make conceptual errors by failing to define critical mass, insisting that each race-neutral alternative must succeed as a stand-alone strategy, and discounting the educational benefits that flow from socioeconomic diversity.
- UNC's witnesses are not able to discredit a powerful menu of race-neutral alternatives. These strategies can produce the educational benefits of diversity and maintain high standards of academic excellence without resorting to racial preferences.
- Simulations of race-neutral alternatives—whether using actual UNC applicant data or including non-applicants who attend public high schools in North Carolina—show that UNC has at its disposal multiple race-neutral strategies that would sustain and even boost diversity while maintaining UNC's academic excellence along many dimensions.

## **II. UNC's Witnesses Cannot Dispute the Substantial Body of Evidence Showing That Selective Colleges and Universities Can Maintain or Increase Diversity through Race-Neutral Strategies Without Sacrificing Academic Quality.**

In my opening and rebuttal reports, I discussed extensive evidence and the experience of selective colleges and academic research that race-neutral alternatives can produce the educational benefits of diversity about as well as racial preferences.<sup>4</sup> I also

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<sup>4</sup> Kahlenberg Report, pp. 5-16; Kahlenberg Rebuttal Report, pp. 2-6.

presented evidence in both reports that past experience and research suggest race-neutral strategies do not compromise academic outcomes.<sup>5</sup>

By contrast, Long claims in both her reports that “high quality” academic research does not support the viability of race-neutral strategies and that the most selective college have not been able to sustain diversity when one considers demographic changes in the student population.<sup>6</sup> She also raises concerns about the academic preparedness of students admitted through race-neutral alternatives.<sup>7</sup> Long’s analysis is wrong on all counts.<sup>8</sup>

**A. Long incorrectly concludes that past experience with race-neutral strategies suggests they are ineffective in producing diversity at highly selective universities such as UNC.**

In my opening report, I outlined evidence from a study finding that 7 of 10 selective colleges employing race-neutral alternatives—including socioeconomic preferences, place-based or geographic approaches, and other strategies—were able to match or exceed levels of black and Hispanic enrollment obtained in the past using racial preferences.<sup>9</sup> I also demonstrated that the other three of those selective colleges could do more to promote racial and ethnic diversity.<sup>10</sup> Long does not directly dispute this study, which was discussed in SFFA’s complaint and in my opening report.<sup>11</sup>

Instead, Long’s rebuttal report seeks to discount the success of these leading public universities using race-neutral strategies on four grounds. She argues: (1) while seven

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<sup>5</sup> Kahlenberg Report, pp. 14-16; Kahlenberg Rebuttal Report, p. 7.

<sup>6</sup> Long Report, pp. 14-41; Long Rebuttal Report, pp. 3-15.

<sup>7</sup> Long Report, p. 24; Long Rebuttal Report, p. 18.

<sup>8</sup> In addition to the material referenced in my initial report, I have relied on the articles, data, analysis and other sources referenced in this report in formulating my opinions.

<sup>9</sup> Kahlenberg Report, p. 6.

<sup>10</sup> Kahlenberg Report, pp. 7-9.

<sup>11</sup> SFFA v. University of North Carolina Complaint, pp. 22-23; Kahlenberg Report, pp. 6-10.

universities did replicate prior levels of black and Hispanic enrollment with race-neutral strategies, two of the seven did not keep up with changes in demographics in the state; (2) the most selective of the 10 were the least likely to be successful; (3) success with race-neutral alternatives in graduate programs are not relevant to undergraduate admissions; and (4) UNC already pursues the type of race-neutral strategies pursued by other state schools.

Long is wrong on all counts.<sup>12</sup>

First, Long seeks to reduce the number of successful programs I identified from 7 to 5 by arguing that while the University of Texas at Austin (“UT”) and Texas A&M may have replicated previous levels of diversity using race-neutral alternatives,<sup>13</sup> they did so during a time when Texas’s high school population was becoming more diverse.<sup>14</sup> Because Texas saw growth in the population of Latino students, Long argues, “maintaining levels of racial and ethnic diversity would actually be movement backwards—in order to truly maintain diversity levels, the proportion of minority students should have increased to mirror the population increase experienced in the state at the same time.”<sup>15</sup>

Here, Long betrays a fundamental misunderstanding of the U.S. Supreme Court’s consideration of the educational benefits of diversity. The Court has held that universities have an interest in garnering a “critical mass” of underrepresented minority students. Never

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<sup>12</sup> Long Rebuttal Report, pp. 10-15. Long also offers a fifth argument that changes in admissions policies could affect the applicant pool. I discuss this issue, which is also raised by Hoxby, later in this report.

<sup>13</sup> It would be difficult to deny that UT and Texas A&M’s programs did not produce greater diversity. See Fisher v. University of Texas, 133 S. Ct. 2411, 2416 (2013) (“Fisher I”) (In 2004, race-neutral programs achieved more racial diversity (4.5% African-American and 16.9% Hispanic shares) than had been achieved using race in 1996 (4.1% African-American and 14.5% Hispanic shares)). See also Richard D. Kahlenberg and Halley Potter, *A Better Affirmative Action: State Universities that Created Alternatives to Racial Preferences* (Century Foundation, 2013), pp. 26-32.

<sup>14</sup> Long Rebuttal Report, p. 10 (“[O]nly five of the ten institutions examined by Kahlenberg and Potter experienced any level of success in maintaining levels of diversity.”).

<sup>15</sup> Long Rebuttal Report, p. 11.

has the Court held that universities may use race to garner a rough “proportional representation” to mirror the state population.<sup>16</sup> Going back to the 1978 Bakke case, the Court rejected proportional representation as an appropriate measure, reasoning that racial balancing for its own sake was patently unconstitutional.<sup>17</sup>

Second, Long argues that the three universities that were unsuccessful in reaching prior levels of black and Hispanic representation—UC Berkeley, UCLA, and the University of Michigan—are the most relevant of the 10 studied because they are highly selective, like UNC.<sup>18</sup> But Long’s contention misses several key points. To begin with, UT, which was successful in maintaining diversity, is, as Long herself notes, at the same level of selectivity as UNC, according to the Barron’s analysis.<sup>19</sup> Likewise, one of the highly selective institutions that had not replicated previous levels of diversity at the time of Potter’s 2012 analysis (UCLA), did achieve considerable success with race-neutral alternatives in 2014, according to one of UNC’s own experts, Mitchell Chang.<sup>20</sup> In addition, as I explained in my opening report, institutions such as UC Berkeley and the University of Michigan could do more to boost racial diversity, such as using wealth in admissions.<sup>21</sup> Moreover, even as Long tries to

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<sup>16</sup> Fisher v. University of Texas, 136 S. Ct. 2198, 2225 (2016) (“Fisher II”) (quotation omitted).

<sup>17</sup> Regents of University of California v. Bakke, 438 U.S. 265, 307 (1978). Even the justices who sided with UC Davis Medical school noted that the 16% quota in dispute was less than statewide proportional representation. 438 U.S. at 374 (Brennan, J., concurring in part and dissenting in part).

<sup>18</sup> Long Rebuttal Report, p. 13.

<sup>19</sup> Long Rebuttal Report, p. 11 n.12.

<sup>20</sup> Chang Rebuttal Report, p. 9 (While UCLA saw African-American freshmen enrollment drop from 264 in 1995 to 144 in 1998, that number rebounded to more than 250 in 2014.). UCLA had already replicated Hispanic representation with race-neutral alternatives by 2009. See Kahlenberg and Potter, *A Better Affirmative Action*, pp. 33 (students in the fall of 1998 were the first to be admitted using race-neutral strategies), and 38 (Fall 2009 Hispanic enrollment exceeded Fall 1997 enrollment prior to the racial preference ban).

<sup>21</sup> Kahlenberg Report, pp. 7-8. Furthermore, as noted in the opening report, institutions such as UC Berkeley and the University of Michigan faced a special disadvantage in recruiting minority students because they have a national pool of applicants and restrictions on using race were imposed by a state referendum rather than a federal court. As a result, out-of-state competitors could continue to use racial preferences.

unfairly discount the success stories of other universities as anomalous to UNC's, it is important to note that a variety of simulations—using UNC-specific data—find successful race-neutral alternatives are available.<sup>22</sup>

Third, Long contends that the success of institutions like UCLA Law School in using race-neutral alternatives are irrelevant to UNC because its applicants are “a non-random subset of the population who seek admittance for undergraduate study.”<sup>23</sup> But UCLA Law School may have more to tell us about UNC than Long suggests. For one thing, UCLA Law is a highly selective institution of the type Long argues is most relevant to UNC.<sup>24</sup> Moreover, because UCLA Law is one of the few institutions to have used wealth (not just income) as a factor in admissions, the experience helps inform how well such a metric might work as a race-neutral alternative.<sup>25</sup>

Fourth, Long suggests that UNC “[a]lready [u]tilizes [s]ome of the [a]dmissions [p]ractices” used by universities pursuing race-neutral alternatives and specifically cites the use of “personal adversity” and “economic disadvantage.”<sup>26</sup> But as I explained in my opening report, that UNC uses those factors is not as important as *how* UNC uses (or could use) those factors; that is, the most relevant question is what *weight* such factors are accorded by UNC in the admissions process. And the evidence demonstrates that UNC affords them little weight. According to sophisticated regression analysis outlined in my opening report, for in-state applicants, being African American carries almost *four times* the weight as being a

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<sup>22</sup> See Kahlenberg Report, pp. 65-79; Kahlenberg Rebuttal Report, pp. 37-57.

<sup>23</sup> Long Rebuttal Report, p. 15.

<sup>24</sup> UCLA's acceptance rate for the class of 2022 was 29.7%. See Law School Numbers, “UCLA Law School,” <http://ucla.lawschoolnumbers.com>.

<sup>25</sup> Kahlenberg Report, pp. 23-24.

<sup>26</sup> Long Rebuttal Report, p. 14.

first-generation college student. Being African American carries almost *23 times* the weight as being eligible for a free waiver.<sup>27</sup> For out-of-state applicants, UNC provided similarly weighted preferences for African Americans compared with socioeconomically disadvantaged students.<sup>28</sup> As shown further below, it can hardly be said that UNC fully exploits socioeconomic status—or a range of other race-neutral alternatives—in its current admissions process.<sup>29</sup> UNC’s very limited utilization of these factors—or any other race-neutral strategies—does not suffice.

**B. Long incorrectly concludes that the best research fails to find viable race-neutral strategies that produce sufficient diversity.**

In my opening report, I referenced three research simulations—by Anthony Carnevale, Matthew Gaertner, and Sigal Alon—finding that socioeconomic preferences, percentage plans, or combinations of the two, can produce high levels of racial, ethnic, and socioeconomic diversity without compromising academic quality.<sup>30</sup> In Long’s opening and rebuttal reports, she offers three different studies—by William Bowen, Sean Reardon and Maria Cancian—finding that race-neutral alternatives (particularly those that provide preferences to low-income students) will not produce sufficient levels of racial and ethnic diversity.<sup>31</sup>

In her rebuttal report, Long suggests that (1) the Bowen/Reardon/Cancian approach to socioeconomic preferences that emphasizes factors such as family income is more realistic because data are not available to admissions officers to implement full-blown socioeconomic

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<sup>27</sup> See Kahlenberg Report, p. 33 (Logit coefficient for in-state African Americans was 4.687, for First Generation College was 1.251, and for Fee Waiver was 0.205).

<sup>28</sup> See Kahlenberg Report, p. 34.

<sup>29</sup> See discussion, *supra*, pp. 30-34.

<sup>30</sup> Kahlenberg Report, pp. 11-16.

<sup>31</sup> Long Report, pp. 33-34 and 37-39; Long Rebuttal Report, pp. 4 and 9.

preferences that consider factors such as wealth; (2) Carnevale's study is flawed for including non-applicants rather than actual applicants; (3) Gaertner's simulation is inapposite because it involves a college that is less selective than UNC; and (4) despite the results of her individual simulations, Alon's summative conclusion is that race-neutral alternatives often do not work. Long's analysis is flawed on all these points.

### 1. Do Universities Have Data to Implement Full-Blown Socioeconomic Preferences?

The major difference between the studies cited by Long and by me boils down to a simple issue: Should researchers use sophisticated definitions of socioeconomic disadvantage that include factors such as family wealth and neighborhood socioeconomic status alongside family income and education (as Carnevale, Gaertner, and Alon do)? Or should researchers employ truncated definitions limited to income, parental education and/or occupation (as the studies by Bowen, Reardon, and Cancian do)?<sup>32</sup> As an abstract matter, the answer is simple—of course, researchers should use the broader definition, as the three studies using a more comprehensive definition of socioeconomic diversity yield positive results on racial and ethnic diversity while the three using truncated definitions yield negative results on racial and ethnic diversity.<sup>33</sup> Notably, Long does not argue otherwise.

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<sup>32</sup> As Long notes, Bowen focuses mostly on income preferences, while Cancian uses parental income, education, and family structure. Long Report, p. 33. Reardon uses parental income, education, and occupation. Sean F. Reardon, Rachel Baker, Matt Kasman, Daniel Klasik, & Joseph B. Townsend, "Can Socioeconomic Status Substitute for Race in Affirmative Action College Admissions Policies? Evidence From a Simulation Model" (Educational Testing Service, 2015).

<sup>33</sup> Another critical element in race-neutral simulations is the weight of the preference provided. The Bowen analysis was flawed because it limited the definition of disadvantage to income and education. See William C. Bowen, Martin A. Kurzweil, & Eugene M. Tobin, *Equity and Excellence in American Higher Education* (2005), pp. 358-59 n.53. In addition, it provided a relatively small socioeconomic preference. In Bowen's analysis on selective institutions—unlike our analysis of UNC—he found that legacies were provided a relatively modest preference, substantially smaller than those provided to underrepresented minorities and athletes. Yet in the simulation he and his colleagues conducted, he provided low-income students not with an athlete or underrepresented minority-size boost, but with the smaller legacy boost. He and his authors provided an unconvincing rationale. They wrote: "The idea of a 'legacy thumb' appeals to us in part because there is a nice kind of symbolic symmetry associated with it." Bowen, et al., *Equity and Excellence in American Higher*

As I explained in my opening report, limiting the definition of socioeconomic disadvantage to such factors as income, education, and occupation is not advisable because it is highly unfair, on average, to African-American and Latino candidates who, in the aggregate, face additional disadvantages associated with (1) neighborhood concentrated poverty, (2) school concentrated poverty, (3) wealth/net worth, and (4) family structure.<sup>34</sup>

With respect to neighborhood poverty concentrations, even middle-class African Americans live in higher-poverty neighborhoods than low-income whites.<sup>35</sup> Black and Hispanic students also are much more likely to attend high-poverty schools than whites students, even those of similar income levels.<sup>36</sup> While African Americans typically earn incomes that are 70% of white incomes, African-American median household wealth is just 10% of white median household wealth.<sup>37</sup> Finally, African-American children are much more likely to grow up in single parent homes, which constitutes an obstacle, on average, to high academic achievement.<sup>38</sup> Adding concentrated neighborhood poverty, school poverty, family wealth, and family structure into a socioeconomic preference is the more realistic thing to do, and also will disproportionately benefit African-American and Hispanic students.

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Education, p. 178. But there is little moral symmetry, certainly, between providing a preference to striving students who have overcome obstacles and one to advantaged legacy students who did absolutely nothing to earn the preference in admissions.

<sup>34</sup> Kahlenberg Report, pp. 22-24.

<sup>35</sup> Kahlenberg Report, p. 22.

<sup>36</sup> See, e.g., Emma Garcia, “Poor Black Children Are Much More Likely to Attend High-Poverty Schools than Poor White Children” (Economic Policy Institute, January 13, 2017), <http://www.epi.org/publication/poor-black-children-are-much-more-likely-to-attend-high-poverty-schools-than-poor-white-children/> (81.1% of poor black children attend high poverty schools compared with 53.5% of poor white children).

<sup>37</sup> Kahlenberg Report, pp. 22-23.

<sup>38</sup> In 2015, 66% of black children and 42% of Hispanic children were raised in single-parent households, compared with 25% of white children. Annie E. Casey Foundation, “Children in Single-Parent Families by Race” (Kids Count Data Center, 2018), <http://datacenter.kidscount.org/data/tables/107-children-in-single-parent-families-by#detailed/1/any/false/573,869,36,868,867/10,11,9,12,1,185,13/432,431>. Growing up in single-parent households poses extra obstacles for children. See Kahlenberg Rebuttal Report, p. 52 n. 193.

Nowhere does Long rebut this evidence or suggest that factors such as wealth, concentrated neighborhood poverty, school poverty levels, or family structure are not relevant factors on the merits to include in admissions decisions.<sup>39</sup> Instead, she responds that it is simply not feasible to include those additional data points. She claims “Mr. Kahlenberg’s concept and definition of socioeconomic status differ significantly from what admissions committees are able to measure. Typically, admissions committees only know one year of an applicant’s family income, and that is only if the applicant applies for financial aid *and* the university makes such information available to the admissions committee.”<sup>40</sup> Long specifically suggests that “wealth” measures “are not customary on college applications” and that “some of the information may not even be available to applicants themselves, such as indicators about their high school and neighborhood.”<sup>41</sup> Hoxby raises similar concerns in her rebuttal report, suggesting that I “may be unaware that accurate wealth data are not only *not* possessed by the university but would be extremely difficult if not impossible to obtain.”<sup>42</sup>

Long and Hoxby are demonstrably wrong on this point. Data on wealth and neighborhood are, in fact, readily available to colleges like UNC to a greater extent than virtually any other institutions in American society. As Hoxby herself recognizes, through the Free Application for Federal Student Aid (FAFSA) form, which all recipients of federal aid must fill out, universities have extensive information about the family wealth of

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<sup>39</sup> Hoxby does raise a technical question about the importance of family wealth, which I address below. See, *infra*, pp. 32-34.

<sup>40</sup> Long Rebuttal Report, p. 7. This is also a contention Long raised in her opening report. See Long Report, pp. 4, 34, and 38.

<sup>41</sup> Long Rebuttal Report, p. 7.

<sup>42</sup> Hoxby Rebuttal Report, p. 71. See also Hoxby Rebuttal Report, pp. 5, 49, and 72.

applicants including the value of checking accounts and savings.<sup>43</sup> Hoxby does not mention that the FAFSA also asks about “[n]et worth of investments,”<sup>44</sup> which includes “brokerage accounts, CDs, stocks, bonds, mutual funds, money market accounts, college savings plans, trust funds, real estate, and other investments.”<sup>45</sup>

Hoxby correctly notes that the FAFSA does not ask families for information about certain wealth factors, such as “the values of the home in which they live, their businesses or farms (unless they employ more than 100 full-time workers), their retirement accounts, their life insurance, or their motor vehicles.”<sup>46</sup> She neglects to mention, however, that UNC is among almost 400 colleges that also require parents seeking aid to fill out the College Board’s CSS Profile as a supplement to the FAFSA.<sup>47</sup> The CSS, which is used by colleges to award institutional aid, generally requires more information than the FAFSA, including data on small businesses and primary residence home equity.<sup>48</sup> And, of course, there is nothing to stop UNC from asking applicants for additional wealth data if the college were concerned about shortfalls in information.

Hoxby correctly notes that not all families fill out the FAFSA.<sup>49</sup> But those who do not do so at UNC (where the annual cost of attendance was \$25,876 per student for North

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<sup>43</sup> Hoxby Rebuttal Report, p. 72.

<sup>44</sup> See U.S. Department of Education, “The EFC [Expected Family Contribution] Formula, 2017-2018,” p. 9 (referencing FAFSA/SAR #91), <http://studentaid.ed.gov/sa/sites/default/files/2017-18-efc-formula.pdf>.

<sup>45</sup> See Mark Kantrowitz, “FAFSA Tips: How to Shelter Your Savings and Get More College Aid” (Money, November 20, 2015), <http://time.com/money/4119244/fafsa-tips-how-to-shelter-savings-for-more-college-aid/>.

<sup>46</sup> Hoxby Rebuttal Report, p. 72.

<sup>47</sup> See College Board, “2018-19 CSS Profile Student Guide,” <http://cssprofile.collegeboard.org/pdf/css-profile-student-guide.pdf>; College Board, “2018-19 Participating Institutions and Programs,” <http://profile.collegeboard.org/profile/pi/participatingInstitutions.aspx>.

<sup>48</sup> Brett Tushingham, “FAFSA vs. CSS Forms: What They Measure, What to Expect” (NerdWallet, August 29, 2016), <http://www.nerdwallet.com/blog/finance/know-college-financial-aid-applications/>.

<sup>49</sup> Hoxby Rebuttal Report, p. 72.

Carolina residents and \$53,100 for out-of-state students in the 2017-18 academic year)<sup>50</sup> can safely be assumed to be among the wealthiest Americans in the nation and therefore are unlikely to be eligible for a socioeconomic preference.

With respect to neighborhood socioeconomic data, UNC has information on the home address of all applicants. Those data can be easily linked to a service provided by the College Board with detailed information about neighborhood and high school demographics. As I noted in my rebuttal report, the College Board divides all communities into 33 Educational Neighborhood Clusters and 29 High School Clusters.<sup>51</sup> These clusters are based on 12 key indicators about neighborhoods (including median family income, education, and SAT scores), and 12 key indicators about high schools (including percentage of families below poverty and number of AP exams per student).

In sum, UNC could easily employ an admissions strategy that emphasizes factors such as neighborhood poverty, school poverty, and wealth that would have a very positive impact on racial, ethnic, and socioeconomic diversity. Again, UNC's experts do not debate the relevance of these factors; and their claim that this information is not available to colleges and universities is plainly incorrect.

## 2. Carnevale: Using Non-Applicants in Simulations.

In addition, Long criticizes the Carnevale study for making assumptions in the simulation that students not currently applying to selective colleges will do so. Long says she prefers the approach used in Bowen's simulation, which uses "actual applicant data."<sup>52</sup> Long

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<sup>50</sup> Kahlenberg Report, p. 28.

<sup>51</sup> Kahlenberg Rebuttal Report, p. 6. See also College Board, "Descriptor PLUS: Cluster Description Guide—Educational Neighborhood Clusters; High School Clusters" (2011), <http://media.collegeboard.com/digitalServices/pdf/miscellaneous/ClusterDescriptionGuide.pdf>.

<sup>52</sup> Long Rebuttal Report, p. 6 n.6.

here raises an important issue that involves legitimate tradeoffs. Using actual applicant data can better replicate the nuanced ways in which admissions occurs; but using non-applicants can simulate what would happen if colleges did a better job of recruiting. I will discuss this issue in further detail below when we compare the simulations produced by me and Arcidiacono (using applicant data) and those by Hoxby (using non-applicants as well).<sup>53</sup> I ultimately ask Arcidiacono to model both approaches—those using applicants and those including non-applicants. At this point, it suffices to say that in favoring the Bowen applicant approach over the Carnevale method, Long’s advocated approach is in tension with Hoxby’s methodology.

### 3. Gaertner: Applicability of Research on Less Selective Schools.

Long also criticizes Gaertner’s study of the University of Colorado (“CU”) because CU is less selective than UNC. While the two institutions do have different levels of selectivity, the Gaertner study remains relevant because it sheds light on how an institution can use sophisticated socioeconomic data (rather than just family income or parental education) to produce considerable racial diversity. Moreover, the simulations in my reports confirm the usefulness of using multi-faceted measures of socioeconomic status rather than focusing narrowly on income.

### 4. Alon: General Conclusions vs. Specific Simulations.

Finally, Long levels two criticisms of my citation to Professor Sigal Alon’s research. First, Long suggests Alon’s 2015 study is to be discounted because it uses data from a 1995 federal study at a time when the student population was much more heavily white than it is

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<sup>53</sup> See discussion, *infra*, pp. 44-46.

today.<sup>54</sup> Second, Long suggests Alon’s “ultimate takeaway is the opposite of what Mr. Kahlenberg describes.”<sup>55</sup>

The first criticism about the relative whiteness of the student population is a peculiar one for Long to raise in the context of looking at whether race-neutral alternatives can achieve a critical mass of underrepresented minority students. It is curious because this fact actually cuts against Long’s position. The fact that Alon was able to show that using race-neutral alternatives could assemble a critical mass of underrepresented minorities at a time when whites were more dominant in the college-age population suggest it will be all that much *easier* for universities today to achieve a critical mass as demographic changes increase the number of students from underrepresented minority populations.

With respect to the second criticism, it is true that Alon finds that several of her race-neutral alternative simulations do not work, and some of her broad-stroke descriptions of her work emphasizes the failures of these simulations. But what is most important is not the gloss Alon places on the overall results but her *actual findings* that under certain conditions a socioeconomic preference “could not only replicate the current level of racial and ethnic diversity at elite institutions but even increase it” and that “all this could be done without jeopardizing academic selectivity.”<sup>56</sup> Under the law, in order to use race, it is not enough for universities to show that “some” race-neutral alternatives fail. Rather, universities must demonstrate than “no workable race-neutral alternatives would produce the educational benefits of diversity.”<sup>57</sup>

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<sup>54</sup> Long Rebuttal Report, p. 8.

<sup>55</sup> Long Rebuttal Report, p. 5 (emphasis omitted).

<sup>56</sup> Kahlenberg Report, pp. 13-14 (quoting Sigal Alon, Race, Class, and Affirmative Action (Russell Sage Foundation, 2015), pp. 254-56).

<sup>57</sup> Fisher I, 133 S. Ct. at 2420.

**C. Long incorrectly concludes that race-neutral strategies compromise academic quality.**

In my opening and rebuttal reports, I outlined evidence from practice and research findings that race-neutral alternatives need not compromise the academic excellence of selective colleges and universities.<sup>58</sup> I also cited evidence that UNC's own officials rejected the claim put forth by lawyers that a percentage plan would lead to the admission of underprepared students.<sup>59</sup>

In her rebuttal report, Long cites a single 2002 study by Daniel Koretz, which she says found that race-neutral alternatives in California “negatively affect academic quality indicators.”<sup>60</sup> But as I noted in my opening and rebuttal reports, the test is not whether an influx of students who have had to overcome socioeconomic obstacles have precisely the same incoming academic indicators, but whether they succeed in college and over the longer term of their careers. Officials at institutions such as UT found no such negative effects.<sup>61</sup> Tellingly, Long does not cite a *single study* finding that actual academic outcomes declined under race-neutral alternatives, even though such policies have been in place for decades in several states. Also tellingly, Long says she offers “no opinion as to what degree of impact is significant in assessing academic standards and excellence.”<sup>62</sup>

**III. UNC’s Experts Continue to Make Several Conceptual Errors in Evaluating the Viability of Race-Neutral Alternatives at UNC.**

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<sup>58</sup> Kahlenberg Report, pp. 14-16; Kahlenberg Rebuttal Report, p. 7.

<sup>59</sup> Kahlenberg Report, p. 41.

<sup>60</sup> Long Rebuttal Report, p. 18.

<sup>61</sup> Kahlenberg Report, p. 14; Kahlenberg Rebuttal Report, p. 7.

<sup>62</sup> Long Rebuttal Report, p. 18.

In their expert rebuttal reports, Long, Hoxby, and Chang repeat (indeed, exacerbate) several conceptual errors evident in their opening reports.<sup>63</sup> I will focus here on three: UNC’s experts (1) fail to articulate a standard for “critical mass” necessary for evaluating whether race-neutral alternatives generate sufficient diversity and continue to reject race-neutral strategies when they fail to meet existing racial representation with absolute precision; (2) incorrectly claim that each race-neutral alternative has to work as a standalone alternative; and (3) fail to recognize that socioeconomic diversity and geographic diversity are relevant indicators (alongside racial diversity) in evaluating whether a race-neutral alternative produces the educational benefits of diversity.

**A. UNC’s experts continue to fail to understand and define critical mass.**

In their rebuttal reports, UNC’s three experts continue to fail to articulate the necessary predicate for any analysis of race-neutral alternatives: what level of racial and ethnic diversity is required to provide the educational benefits of diversity? (This is consistent with the refusal of UNC witnesses to concretely define critical mass).<sup>64</sup> As I noted in my rebuttal report, absent a concrete definition of what success looks like, it is impossible to demonstrate that a race-neutral alternative has failed.

The Supreme Court has held that universities have a compelling interest in achieving the educational benefits of diversity, and that in order to garner those benefits, a university must have a “critical mass” of underrepresented minority students that will allow such

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<sup>63</sup> See Kahlenberg Rebuttal Report, pp. 7-20 (outlining eight conceptual errors).

<sup>64</sup> Kahlenberg Report, pp. 71-72 (citing UNC testimony that there is no minimum percentage of underrepresented minorities required to achieve the educational benefits of diversity).

students to feel comfortable participating and not speak as a representative of their race.<sup>65</sup> UNC itself says it “aims to enroll critical masses of students who identify themselves as members of groups the University deems underrepresented.”<sup>66</sup>

As I pointed out previously, in their opening reports Chang, Hoxby, and Long all failed to quantify in any meaningful way the parameters of what Chang called the “flexible range” of racial and ethnic diversity that is deemed necessary to gain the educational benefits of diversity.<sup>67</sup> They perpetuate this mistake in their respective rebuttal reports.

Chang, whose rebuttal report focuses on the benefits of diversity, does not refute my opening report’s critique that UNC has failed to articulate a standard for what constitutes a critical mass of underrepresented students.<sup>68</sup> At the same time, remarkably, he rejects as insufficient my race-neutral alternative found in Simulation 3. Under that model, which provides a socioeconomic preference, Hispanic representation would essentially remain consistent, socioeconomic diversity would increase more than 12 percentage points, and African-American representation would decline less than 1 percentage point.<sup>69</sup> Nevertheless, Chang declared without any scholarly justification that this sizeable *net increase* in racial and socioeconomic diversity “almost certainly would have a negative impact on campus climate and undermine the educational benefits that flow from racial diversity, to the detriment of

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<sup>65</sup> See Grutter v. Bollinger, 539 U.S. 306, 330 (2003). See also Fisher II, 136 S. Ct. at 2212 (“Although demographics alone are by no means dispositive, they do have some value as a gauge of the University’s ability to enroll students who can offer underrepresented perspectives.”).

<sup>66</sup> UNC0079436 and UNC0000016 (cited in Hoxby Report, p. 8).

<sup>67</sup> Kahlenberg Rebuttal Report, pp. 7-11.

<sup>68</sup> Kahlenberg Report, pp. 18-19.

<sup>69</sup> Kahlenberg Report, p. 70 (Simulation 3). Under this simulation, Hispanic representation moves from 7.3% to 7.2%, socioeconomically disadvantaged from 19.6% to 32.3%, and African-American from 8.8% to 7.9%.

the University.”<sup>70</sup> In doing so, he focuses on the tiny change in African American representation and disregards the large increase in SES diversity.

As support, Chang cites no research to suggest that a shift of less than one percentage point would make a material difference. Instead he references the testimony of individual students, one of whom says, “Sometimes in classes of 200 or more, I would be the only person of color or the only Black male.”<sup>71</sup> But Chang fails to connect the findings of the simulation with this testimony. In a typical class of 200, under the race-neutral alternative, UNC would on average have 16 rather than 18 African-American students, 15 rather than 16 Hispanic students, and 65 rather than 39 socioeconomically disadvantaged students. Nowhere does Chang explain why this “almost certainly would have a negative impact . . .”<sup>72</sup> This is, of course, because there is no explanation for his naked assertion.

UNC’s experts seem to assume that *any* deviation from the existing levels of racial diversity would present an unacceptable sacrifice in the educational benefits of diversity. Long, for example, articulates a standard for judging race-neutral alternatives that requires that such strategies “replicate the levels of racial and ethnic diversity achieved through race-conscious policies . . .”<sup>73</sup> But that cannot be the central standard envisioned by the Supreme Court. If a university achieved a 50% African-American representation using racial preferences and could achieve a 49% representation with race-neutral alternatives, for instance, the alternative would presumably be considered viable because the test is not

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<sup>70</sup> Chang Rebuttal Report, pp. 7-9.

<sup>71</sup> Chang Rebuttal Report, p. 8.

<sup>72</sup> Chang Rebuttal Report, pp. 7-9.

<sup>73</sup> Long Rebuttal Report, p. 3.

whether an alternative can replicate the status quo per se, but whether it can achieve a critical mass of students necessary to attain the educational benefits of diversity.<sup>74</sup>

**B. UNC’s experts continue erroneously to insist that race-neutral alternatives must work as standalone strategies.**

In their opening reports, UNC experts rejected various race-neutral alternatives, claiming that they did not succeed in achieving the educational benefits of diversity in isolation from other race-neutral strategies.<sup>75</sup> In my rebuttal report, I pointed out that because the Supreme Court requires universities achieve the educational benefits of diversity without resort to racial preferences when possible, it makes no sense to evaluate alternatives as standalone strategies, but rather in tandem with one another.<sup>76</sup>

In their rebuttal reports, UNC’s experts persist in employing this faulty mode of analysis. Long, for example, suggests the Texas top 10% plan was a failure because it did not achieve diversity as a standalone strategy but needed to be supplemented with targeted scholarships for students from high schools with low college-going rates.<sup>77</sup> Likewise, Long dismisses “additional recruitment and eliminating legacy preferences” as race-neutral strategies because they “are insufficient as standalone race-neutral admission practices.”<sup>78</sup> But the test is not, whether these alternatives “could have a large impact alone,”<sup>79</sup> but

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<sup>74</sup> As noted earlier, UNC experts seem at other times to veer into a concept of proportional representation as an acceptable standard, something the courts have clearly rejected. See, e.g., Long’s discussion in her rebuttal report of UT’s plan as a failure, even though it produced substantial racial diversity, because of demographic changes in the state. Long writes: “maintaining levels of racial and ethnic diversity would actually be moving backwards—in order to truly maintain diversity levels, the proportion of minority students should have increased to mirror the population increases experienced in the state at the same time.” Long Rebuttal Report, p. 11.

<sup>75</sup> Long Report, pp. 5, 9, and 32; Hoxby Report, p. 4.

<sup>76</sup> Kahlenberg Rebuttal Report, pp. 13-14.

<sup>77</sup> Long Rebuttal Report, p. 11.

<sup>78</sup> Long Rebuttal Report, p. 17.

<sup>79</sup> Long Rebuttal Report, p. 17.

whether, taken together with other strategies, the combination can produce a viable alternative.

**C. UNC’s experts continue to fail to appreciate the ways in which socioeconomic and geographic diversity contribute to the educational benefits of diversity.**

In examining the effects of race-neutral alternatives, Hoxby’s, Long’s, and Chang’s opening reports neglected to consider educational benefits that flow from socioeconomic and geographic diversity (alongside racial and ethnic diversity), an omission I explained in my rebuttal report.<sup>80</sup> In their rebuttal reports, all three of UNC’s experts double down on this mistake.

UNC’s experts make three sets of arguments for excluding the benefits of socioeconomic and geographic diversity from the evaluation of race-neutral alternatives. Collectively, they suggest that (1) considering the educational benefits of socioeconomic diversity is not relevant to the evaluation of race-neutral strategies and instead represents my personal interest; (2) while it is possible that there are educational benefits of socioeconomic diversity, empirical evidence is lacking; and (3) even if socioeconomic diversity is of educational value, it is more logical to employ racial and socioeconomic preferences in admissions to achieve both results.

First, UNC experts explicitly reject the relevance of socioeconomic diversity to the evaluation of race-neutral strategies. A focus on “whether a race-neutral alternative will increase diversity from both a racial and socioeconomic perspective,” says Long, is “misplaced.”<sup>81</sup> Instead, she suggests, the standard is whether the alternative “would replicate

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<sup>80</sup> Kahlenberg Rebuttal Report, pp. 14-16.

<sup>81</sup> Long Rebuttal Report, p. 1 (emphasis omitted).

the levels of racial and ethnic diversity achieved through race-conscious policies.”<sup>82</sup> Hoxby, likewise, says including consideration of socioeconomic diversity in evaluation of race-neutral alternatives is inappropriate; the proper measure is “solely on the basis of whether they would allow UNC to maintain racial diversity.”<sup>83</sup> Hoxby claims my report is “colored by his clear preference for and desire to increase socioeconomic diversity” despite its irrelevance to the analysis at hand.<sup>84</sup>

But the command to evaluate policies on the basis of the educational benefits of diversity broadly defined comes not from me but from a long line of Supreme Court decisions. In the 1978 Bakke Case, Justice Powell noted that “[t]he diversity that furthers a compelling state interest encompasses a far broader array of qualifications and characteristics of which race or ethnic origin is but a single though important element.”<sup>85</sup> In the 2003 decision of Grutter v. Bollinger, the Court pointed out that Justice Powell’s Bakke opinion was “careful to emphasize that in his view race ‘is only one element in a range of factors a university properly may consider in attaining the goal of a heterogeneous student body.’”<sup>86</sup>

When one considers the rationale for *why* the Court considers the educational benefits of diversity, it becomes clear that socioeconomic diversity is relevant alongside racial diversity. The Court has observed that “the nation’s future depends upon leaders trained through wide exposure to the ideas and mores of students as diverse as this Nation of many

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<sup>82</sup> Long Rebuttal Report, p. 3.

<sup>83</sup> Hoxby Rebuttal Report, pp. 5-6. See also Hoxby Rebuttal Report, p. 49 (including socioeconomic diversity “is not my understanding of what UNC must assess in considering whether a workable race-neutral alternative exists”).

<sup>84</sup> Hoxby Rebuttal Report, p. 74. Long makes a similar claim, suggesting my report is “slanted” by my “self-acknowledged advocacy of socioeconomic-based admissions practices with the goal of increasing the representation of low-income students at selective institutions.” Long Rebuttal Report, p. 1.

<sup>85</sup> See Bakke, 438 U.S. at 315. See also id. at 316; Grutter, 539 U.S. at 324-25.

<sup>86</sup> Grutter, 539 U.S. at 324 (quoting Bakke, 438 U.S. at 314).

peoples.”<sup>87</sup> The Court has also noted that “classroom discussion is livelier, more spirited, and simply more enlightened and interesting when the students have the greatest possible variety of backgrounds.”<sup>88</sup>

In *Grutter v. Bollinger*, the Court recognized a second interest: “In order to cultivate a set of leaders with legitimacy in the eyes of the citizenry, it is necessary that the path to leadership be visibly open to talented and qualified individuals of every race and ethnicity.” Speaking more expansively, the Court continued, “All members of our heterogeneous society must have confidence in the openness and integrity of the educational institutions that provide this training.”<sup>89</sup>

Racial and ethnic diversity contribute to both goals, but so too does socioeconomic diversity. If one is looking for a lively discussion from students with “the greatest possible variety of backgrounds,” then including a poor white student from a trailer park would surely add value.

Likewise, socioeconomic diversity is highly relevant to promoting the second interest the Court has identified: “All members of our heterogeneous society must have confidence in the openness” of institutions that train our nation’s leaders. A racially diverse class that effectively excludes students from families in the bottom half of the socioeconomic spectrum is unlikely to instill “legitimacy in the eyes of the citizenry.”<sup>90</sup>

Second, UNC’s experts take the surprising tack of disparaging socioeconomic diversity as lacking in educational value. For example, Chang ignores the important literature

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<sup>87</sup> *Grutter*, 539 U.S. at 324 (quotation omitted).

<sup>88</sup> *Grutter*, 539 U.S. at 330 (quotation omitted).

<sup>89</sup> *Grutter*, 539 U.S. at 332.

<sup>90</sup> *Grutter*, 539 U.S. at 332.

on this subject and simply faults me for not citing “any empirical research or evidence to support [my] claim that SES diversity would yield similar educational benefits as racial diversity.”<sup>91</sup> Chang goes on to suggest that I do “not explain how, for example, focusing on SES diversity would help to achieve an educational setting that exposes students to the diverse ideas and mores of the peoples of our nation.”<sup>92</sup> Likewise, Chang says I do “not explain how SES diversity leads to a reduction of prejudice, combats tokenism, or increases satisfaction with college or persistence to graduation.”<sup>93</sup> Chang’s gambit here is misdirection. The problem is not my failure to cite the evidence supporting the educational value of socioeconomic diversity. It is Chang’s refusal to acknowledge it.

Educators across the country—including at UNC—believe that socioeconomic diversity, particularly at wealthy selective institutions, exposes students to diverse ideas. As one University of Pennsylvania Law professor noted, his racially diverse class had “very few students who come from … the blue-collar working class. What that means is that no one has any idea what life is like on the other side of the tracks. That leads to a very sterile discussion when it comes to labor law.”<sup>94</sup>

Socioeconomic diversity can also lead to a reduction of prejudice. Dartmouth College Dean Kerry Landers, for example, writes about how one low-income student helped educate a fraternity about why it was wrong to hold a party with a “white trash” theme.<sup>95</sup> She quotes a low-income African-American student at Amherst on the need to address classism

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<sup>91</sup> Chang Rebuttal, p. 4.

<sup>92</sup> Chang Rebuttal, p. 7.

<sup>93</sup> Chang Rebuttal, p. 7.

<sup>94</sup> Quoted in Richard D. Kahlenberg, *The Remedy: Class, Race, and Affirmative Action*, p. 171 (1996).

<sup>95</sup> Kerry H. Landers, *Postsecondary Education for First-Generation and Low-Income Students in the Ivy League: Navigating Policy and Practice* (Palgrave Macmillan, 2017), p. 85.

on campus: “Amherst is very open and nonjudgmental about race,” he says, but “the judging is done based on your class instead.”<sup>96</sup>

Socioeconomic diversity can also reduce feelings of isolation and tokenism at an institution like UNC where low-income students are outnumbered by high-income students by 16 to 1.<sup>97</sup> Samuel Koplinka-Loehr, who was a working-class student at Middlebury College earlier this decade, said he felt out of place on the wealthy campus, ashamed that he didn’t understand cultural references commonly used by classmates.<sup>98</sup> Likewise, Ana Barros, a recent low-income student at Harvard, said when she first arrived on campus “she felt marginalized and out of place in a sea of wealth.”<sup>99</sup> After forming a network of those rare low-income students from other Ivy League schools she said her feelings of shame and isolation were giving way to a feeling of community.<sup>100</sup>

This is all consistent with and supported by strong empirical research demonstrating the educational benefits of socioeconomic diversity. In a study of 14,894 students at 88 colleges, for example, Professor Julie Park of the University of Maryland, and her colleagues Nida Denson and Nicholas Bowman, found that cross-racial interaction was maximized when universities were both racially and socioeconomically diverse.<sup>101</sup> The authors found that “a socioeconomically diverse institution is associated both with more frequent

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<sup>96</sup> Landers, Postsecondary Education, p. 103.

<sup>97</sup> Kahlenberg Report, p. 26.

<sup>98</sup> Richard D. Kahlenberg, “How Much Money Do You Pay for College? A Once-Taboo Topic Emerges from the Shadows” (Chronicle of Higher Education, February 11, 2013).

<sup>99</sup> Richard D. Kahlenberg, “How Low-Income Students Are Fitting in at Elite Colleges” (The Atlantic, February 24, 2016).

<sup>100</sup> Id.

<sup>101</sup> Julie J. Park, Nida Denson, and Nicholas A. Bowman, “Does Socioeconomic Diversity Make a Difference? Examining the Effect of Racial and Socioeconomic Diversity on the Campus Climate for Diversity,” 50 American Educational Research Journal 466 (June 2013), p. 478, <http://journals.sagepub.com/doi/abs/10.3102/0002831212468290>.

interactions across race and greater involvement in CCD [curricular/co-curricular diversity] activities.”<sup>102</sup>

Kim and colleagues had three possible explanations for this positive result. First, because low-income whites generally have greater experience interacting with minority students in high school than do wealthier whites, they are more likely to engage across racial lines in college.<sup>103</sup> Second, when colleges have more socioeconomic diversity, it is less likely that wealthy white students will socialize strictly with other wealthy white students. Third, having greater racial and socioeconomic diversity “will lead to greater relative equal status between students, which will facilitate intergroup contact.”<sup>104</sup> The authors conclude: “Overall, this article provides compelling evidence that engagement with racial diversity … is influenced not just by explicitly racial dimensions of diversity, but also by various forms of socioeconomic diversity.”<sup>105</sup>

Finally, but perhaps most importantly, Chang’s position here contradicts UNC’s own position that socioeconomic diversity has educational benefits.<sup>106</sup> As I noted in my opening report, UNC officials have recognized that socioeconomic and geographic diversity are critical to the education of students.<sup>107</sup> The University’s 2005 Diversity Action Plan, for example, said that in evaluating the benefits of diversity race should be “a single element”

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<sup>102</sup> Id. at 466-67. See also id. at 486.

<sup>103</sup> Id. at 471, 473, and 475.

<sup>104</sup> Id. at 476-77. See also id. at 487-88.

<sup>105</sup> Id. at 489.

<sup>106</sup> See Kahlenberg Report, pp. 44-45 (citing several UNC documents on the importance of socioeconomic diversity.)

<sup>107</sup> See Kahlenberg Report, pp. 44-45.

within a “larger definition of diversity” that is defined “broadly” to include “*differences in social background [and] economic circumstances.*”<sup>108</sup>

Third, Chang argues that even if one believes socioeconomic diversity matters alongside racial diversity, the natural conclusion is to pursue socioeconomic preferences *alongside* racial preferences, just as UNC currently does, rather than substituting socioeconomic preference for racial preferences.<sup>109</sup> Chang suggests that racial and socioeconomic diversity are not “interchangeable” and that racial diversity matters irrespective of the level of economic diversity.<sup>110</sup> I emphatically agree that both types of diversity matter (and I would reject an alternative that, for example, doubled socioeconomic diversity but cut racial diversity in half.)

But here Chang confuses *means* and *ends*. While it might seem logical that the best way to achieve racial and socioeconomic diversity in admissions is to consider both factors in admissions, that theory has not been borne out in practice. What this logic fails to factor in is that colleges have wildly different incentives to pursue racial and socioeconomic diversity. Racial diversity is visible to the naked eye, has high profile interest groups to support it, and, if focused on upper-middle class students, is relatively inexpensive. Socioeconomic diversity, by contrast, is less visible to casual observers, has few organized champions, and is comparatively expensive to pursue.

It is not surprising, therefore, that at UNC being African American carries almost four times as much weight in admissions as being first-generation college, and almost 23

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<sup>108</sup> Kahlenberg Report, p. 44 (emphasis added) (quotation omitted).

<sup>109</sup> Chang Rebuttal Report, p. 7.

<sup>110</sup> Chang Rebuttal Report, pp. 5-7.

times the weight of being low-income.<sup>111</sup> As a result, this ostensibly “dual” attention to race and socioeconomic status, which is in fact heavily lopsided in the direction of race, yields far less economic than racial diversity. More importantly, as I have shown throughout my opening and rebuttal reports, *substituting* meaningful socioeconomic preferences for racial preferences results in *greater* combined socioeconomic and racial diversity than does the current system, which purports to consider both race and class in admissions but in fact gives short shrift to socioeconomic status.

#### **IV. UNC’s Experts Cannot Justify UNC’s Complete Failure to Fully Consider Numerous Race-Neutral Strategies.**

In my opening and rebuttal reports, I noted that despite the Supreme Court’s clear requirement that universities must demonstrate that “no workable race-neutral alternatives would produce the educational benefits of diversity,” UNC conducted only elementary investigations until the advent of this litigation.<sup>112</sup> If UNC had conducted the required analysis, it would have discovered that there were multiple race-neutral alternatives available. I discuss them below.

##### **A. Socioeconomic Preferences**

My opening and rebuttal reports provided evidence that UNC could use socioeconomic preferences to increase racial, ethnic, and socioeconomic diversity. I outlined evidence showing, among other things, that (1) UNC currently provides much greater weight to race in admissions than socioeconomic status and therefore could increase the weight it provides to socioeconomic status as part of a race-neutral alternative; and (2) socioeconomic preferences that emphasize factors such as wealth and concentrated poverty (as opposed to

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<sup>111</sup> Kahlenberg Report, p. 33. While UNC’s emphasis on race over socioeconomic status is unsurprising, it is nevertheless unlawful given that race-neutral strategies would work about as well as using race.

<sup>112</sup> Fisher I, 133 S. Ct. at 2420. See Kahlenberg Report, pp. 16-21; Kahlenberg Rebuttal Report, p. 20.

focusing only on parental income, education, and occupation) are especially likely to yield racial diversity.<sup>113</sup> (My opening and rebuttal reports also included simulations of socioeconomic preferences, which I discuss separately in part V of this report.)

UNC's experts provide three responses in their rebuttal reports: (1) UNC does not count race heavily in admissions and already provides preferences based on socioeconomic status; (2) wealth is not a good indicator of opportunity in college; and (3) socioeconomic variables that include wealth and concentrated poverty are not typically available to admissions officers.

*First*, UNC's experts claim that race is a minor factor in admissions and that socioeconomic status is already factored into admission decisions. Hoxby takes pains to suggest that race is a minor factor in UNC's admissions process. She suggests that even using Arcidiacono's models, "race/ethnicity explains only 2.0 percent to 6.7 percent, depending on the model," suggesting "race is not a dominant factor in UNC's admissions."<sup>114</sup> Likewise, Long claims that socioeconomic disadvantage measures "are essential parts of holistic review and factors that UNC-Chapel Hill already considers."<sup>115</sup>

But Hoxby's claim that race is a relatively minor factor in UNC's admissions process is in deep tension with her findings that removing race from consideration would have dramatic results.<sup>116</sup> Moreover, while it is true that socioeconomic status is currently a factor

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<sup>113</sup> Kahlenberg Report, pp. 22-36; Kahlenberg Rebuttal Report, pp. 20-21. I also provided evidence that UNC's socioeconomic diversity is deeply lacking; and that UNC does not give its admissions officers access to critical income and wealth data that could be used to implement a race-neutral alternative. See Kahlenberg Report, pp. 26-31.

<sup>114</sup> Hoxby Rebuttal Report, p. 2. See also Hoxby Rebuttal Report, pp. 7-8.

<sup>115</sup> Long Rebuttal Report, pp. 14-15.

<sup>116</sup> See, e.g., Hoxby Report, p. 71 (using a particular race-neutral strategy, the Strivers Index, would leave UNC with "extraordinarily little racial and ethnic diversity").

in admissions, as Long suggests, UNC's experts do not and cannot rebut Arcidiacono's finding that UNC weights race much more heavily than socioeconomic status.<sup>117</sup>

The lack of emphasis on socioeconomic status as factor in admissions helps explain why UNC is profoundly lacking in socioeconomic diversity. As I explained in my opening report, more students at UNC have come from the top 5% of the income distribution than the bottom 60%.<sup>118</sup> (For discussion of Hoxby's socioeconomic preference simulations, see Part V.)

*Second*, UNC's experts question the use of wealth in admissions in part because it is allegedly not a good predictor of college enrollment. Hoxby cites a report from Sacramento State professor Su Jin Jez, which finds that while wealthier students are more likely to attend a four-year college, "the influence of wealth is essentially eliminated once we consider academic achievement, habitus, and social and cultural capital."<sup>119</sup> But this quote is not representative of the most relevant findings; a proper reading of the Jez report shows that her analysis does nothing to undercut the idea of using wealth as a race-neutral factor in college admissions and in fact greatly *strengthens* the case.

To begin with, consider the conclusion that Hoxby cites: that "academic achievement, habitus, and social and cultural capital" are what drive college attendance rather than wealth per se. This finding has little direct relevance to race-neutral-alternatives analysis. Academic achievement, of course, is already considered in college admissions as a

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<sup>117</sup> Indeed, as I noted in my rebuttal report, Long presents research confirming that, as a general matter, selective colleges provide much larger preferences based on race than socioeconomic status. Long Report, p. 32 (citing Reardon's research). In my opening report, I also cited four studies by supporters of racial preferences finding that race counts more than socioeconomic status at selective colleges. Kahlenberg Report, pp. 34-35.

<sup>118</sup> Kahlenberg Report, p. 27.

<sup>119</sup> Su Jin Jez, "The Influence of Wealth and Race in Four-Year College Attendance" (Center for Studies in Higher Education, University of California, Berkeley, November 2008), p. 1.

positive factor. In considering obstacles overcome, an admissions officers might well want to consider a student’s “habitus” (which Jez defines as “a person’s collection of dispositions, continually developed and reformulated from one’s upbringing and direct environment”)<sup>120</sup> along with access to “social and cultural capital.” But if Hoxby thinks wealth is difficult to define, she is giving admissions officers an even taller order if she wants them to operationalize a process that systematically and concretely measures these factors across thousands of applications.

In point of fact, Jez’s paper provides strong *support* for using wealth as a race-neutral factor in college admissions. In looking for race-neutral criteria, two qualities are desirable: (1) a resource that predicts high academic achievement (because disadvantaged students who do fairly well academically despite lacking access to the resource show considerable academic potential); and (2) a factor that is closely associated with race and will therefore yield racial diversity indirectly.

Jez’s paper shows using wealth meets both criteria quite well. On the first criterion—prediction of academic achievement—wealth enables families to afford educational opportunities for children (the ability to purchase a home in a strong school district or pay private school tuition). Jez concludes, “[t]hese results indicate that wealth’s significance lies largely in its promotion of higher levels of academic achievement.”<sup>121</sup> Jez further makes the case that wealth is a much better indicator of opportunity than income. She writes: “Wealth and income are markedly different. Wealth measures the total supply of financial resources available to a family, whereas income only measures a family’s stream of cash payments at

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<sup>120</sup> Id. at 4.

<sup>121</sup> Id. at 11.

any given time. As such, wealth serves as a better measure of the financial well-being of families.”<sup>122</sup>

On the second criterion, Jez finds race much more strongly connected to wealth than to income. She writes: “research indicates that focusing solely on income to measure financial resources ignores the huge gaps in wealth by race.”<sup>123</sup> Underlining the close association, she finds: “controlling for wealth causes the disparities in four-year college attendance associated with race to disappear.”<sup>124</sup>

*Third*, UNC’s experts question whether factors such as wealth and concentrated poverty are available.<sup>125</sup> As noted earlier, however, these data are readily available through the FAFSA and CSS Profile, both of which UNC employs.<sup>126</sup>

## B. Increasing Financial Aid

In my opening and rebuttal reports, I explained that UNC could attract more racial and socioeconomic diversity by increasing its commitment to financial aid. I explained that UNC’s financial aid policies are much less generous than other institutions, such as UC Berkeley and UCLA; UNC diverts resources to non-need “merit aid” for students who do not actually need financial aid to attend UNC; UNC arbitrarily caps the proportion of student tuition that can be used to subsidize low-income students at a rate much lower than other leading universities. So there is much room for UNC to improve in this regard. Further, I explained that UNC has the means to improve, given that UNC is one of the

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<sup>122</sup> Id. at 2.

<sup>123</sup> Id.

<sup>124</sup> Id. at 1.

<sup>125</sup> See, e.g., Long Rebuttal Report, p. 7; Hoxby Rebuttal Report, pp. 5, 48-49, and 72.

<sup>126</sup> See discussion *supra*, pp. 13-15.

wealthiest universities in the world and that UNC officials have testified that they would do what is necessary to maintain diversity, including increasing financial aid.

In their rebuttal reports, UNC's experts limit their responses to two observations. Long says (1) it is "perhaps outside of the North Carolina budget" to raise financial aid to the level of UC Berkeley or UCLA, and (2) the blame for the restrictive cap on using UNC tuition for financial aid is the fault of the Board of Governors not the Office of Undergraduate Admissions.<sup>127</sup>

As to the first observation, Long provides no evidence that UNC cannot afford to increase financial aid (her use of the word "perhaps" thus is revealing). This is, of course, because there is no such evidence. UNC is the 35<sup>th</sup> wealthiest of more than 26,000 universities in the world; and it could easily halt or curtail its current policy of diverting financial aid dollars to non-need merit aid in favor or more need-based aid.<sup>128</sup>

Long's second observation is a dodge. Shifting blame for UNC's unusually restrictive cap on using tuition revenue for financial aid to the Board of Governors also seems misplaced given that board members are among the defendants in the litigation.<sup>129</sup>

### C. Utilizing Geographic Diversity

In my opening report, I identified a number of universities, including the University of Texas and University of Florida, that have successfully employed place-based or geographic approaches to admissions of in-state students.<sup>130</sup> I also outlined a plan for how a geographic plan could work for out-of-state applicants, referencing the Harvard scholar

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<sup>127</sup> Long Rebuttal Report, p. 17.

<sup>128</sup> Kahlenberg Report, p. 38; Kahlenberg Rebuttal Report, pp. 21-22.

<sup>129</sup> SFFA v. UNC Complaint, p. 1.

<sup>130</sup> Kahlenberg Report, pp. 5, 14, and 39.

Danielle Allen, and the existence of nationally available Neighborhood and High School Cluster data assembled by the College Board. In my rebuttal report, I responded to concerns about percentage plans raised by Hoxby and Long.<sup>131</sup>

In their rebuttal reports, Hoxby and Long outline three new concerns: (1) Long claims Allen’s “geography-based” approach is “theoretical,” stating that Allen is “the only proponent of this concept”;<sup>132</sup> (2) both Long and Hoxby raise concerns about how College Board Cluster data would be used—Long says I provide “no explanation or detail as to how UNC-Chapel Hill might implement such a plan,”<sup>133</sup> and Hoxby says I have “not specified how these cluster groupings might be used”;<sup>134</sup> (3) finally, Hoxby raises a concern about how an in-state high school percentage plan would work for small high schools and home schooled students.<sup>135</sup> (Hoxby also raises concerns about simulation of geographic diversity plans, which I address separately in Section V.)

In response to the first concern, it is not accurate to say that Allen is the “only proponent” of geography-based approaches to diversity. Sheryll Cashin, a Georgetown Law Professor whom I cite in my opening report,<sup>136</sup> wrote a highly regarded and widely discussed book-length discussion of geographic considerations to promote diversity entitled, *Place, Not Race: A New Vision of Opportunity in America*.<sup>137</sup> Allen also points out that geographical considerations are a “tried and true” approach in American education; National Merit

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<sup>131</sup> Kahlenberg Rebuttal Report, pp. 23-26.

<sup>132</sup> Long Report, pp. 15-16.

<sup>133</sup> Long Rebuttal Report, p. 2.

<sup>134</sup> Hoxby Rebuttal Report, p. 69.

<sup>135</sup> Hoxby Rebuttal Report, pp. 68-69.

<sup>136</sup> Kahlenberg Report, p. 25.

<sup>137</sup> Sheryll Cashin, *Place, Not Race: A New Vision of Opportunity in America* (Boston: Beacon Press, 2014).

Scholars and Rhodes Scholars, for example, are chosen on the basis of regional competitions.<sup>138</sup> Moreover, percentage plans used by three of the nation's largest state university systems—the University of California, the University of Texas, and the University of Florida—have many proponents, including some of the leading advocates of civil rights in the nation.<sup>139</sup>

With respect to the concern about College Board Cluster data, UNC could use this information in a very straightforward way. As an analogue to an in-state high school percentage plan, UNC could aim in its admission of out-of-state applicants to take a comparable number of students from each of the 33 neighborhood clusters. Doing so would demonstrate a commitment to sociogeographic diversity and would likely translate into a great deal of racial and socioeconomic student diversity given the design principles upon which the College Board's clusters are based.

With respect to how an in-state percentage plan would work at extremely small high schools and for home-schooled students, the issue is easily resolvable. There is, after all, no requirement that a percentage plan admit 100% of students. UT, for example, caps at 75% the number of students admitted through the top 10% plan.<sup>140</sup> Clearly, there is no requirement, as Hoxby suggests, that a 4.5% plan “would never admit any student from a high school graduating class of less than 23.”<sup>141</sup>

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<sup>138</sup> Danielle Allen, “Talent Is Everywhere: Using Zip Codes and Merit to Enhance Diversity,” in Richard D. Kahlenberg (ed.), *The Future of Affirmative Action: New Paths to Higher Education Diversity after Fisher v. University of Texas* (Century Foundation/Lumina Foundation, 2014), p. 147.

<sup>139</sup> See, e.g., Lani Guinier and Gerald Torres, *The Miner’s Canary: Enlisting Race, Resisting Power, Transforming Democracy* (Cambridge, Mass.: Harvard University Press, 2003).

<sup>140</sup> See Stella M. Flores and Catherine L. Horn, *Texas Top Ten Percent Plan: How It Works, What Are Its Limits, and Recommendations to Consider* (Educational Testing Service, 2015), p. 6.

<sup>141</sup> Hoxby Rebuttal Report, p. 69. As discussed further below in this reply report, in the simulation of the 4.5% plan, I respond to Hoxby’s criticism that my earlier simulation left some seats unfilled by refining the model to

#### **D. Eliminating Legacy Preferences**

In my opening and rebuttal reports, I demonstrated that UNC currently provides legacy preferences in admissions for the children of alumni, who are disproportionately wealthy and white; and that eliminating these preferences and practices would increase racial, ethnic, and socioeconomic diversity.

UNC's experts do not dispute that legacy preferences used by UNC disproportionately hurt disadvantaged minority and socioeconomically disadvantaged students.<sup>142</sup> Instead, in their rebuttal reports, Long and Hoxby return to a chord they struck in their opening reports: that only small numbers of students are affected, and this race-neutral alternative would not by itself be an effective strategy. Hoxby writes, "Eliminating Alumni Preferences Is Not a Standalone Workable Race-Blind Alternative."<sup>143</sup> She said under Arcidiacono's model, only 228 legacy applicants in an average admissions cycle "have their admissions decision affected by legacy preferences out of an average applicant pool of 27,285."<sup>144</sup>

Two responses are in order. First, legacies are a significant part of UNC's admissions process, particularly for out-of-state students. In the class of 2019, for example, the number of out-of-state legacy admits (316) was comparable to the number of African-American admits (324) as well as the number of Hispanic admits (368).<sup>145</sup> Second, and more

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fill 15.5% of seats outside of the percentage plan. This revised simulation is not dissimilar from UT's plan to fill 25% of seats outside the percentage plan. See discussion *infra*, pp. 61-64.

<sup>142</sup> Indeed, as noted in my rebuttal report, Long agrees, writing that "the preference for legacy applicants puts students in these racial and ethnic groups at a disadvantage and may work counter to having a racially and ethnically diverse class." Long Report, p. 45.

<sup>143</sup> Hoxby Rebuttal Report, p. 70.

<sup>144</sup> Hoxby Rebuttal Report, p. 70.

<sup>145</sup> See Kahlenberg Report, Appendix, Table C.1b (for status quo African-American and Hispanic out-of-state admits in class of 2019).

importantly, race-neutral analysis involves looking at a combination of strategies, not each as a standalone strategy. As I noted in my rebuttal report, it makes no sense to reject an alternative that contributes to racial and ethnic diversity just because it does not, all by itself, achieve the goal. Indeed, leading universities that have eliminated legacy preferences as a race-neutral strategy have done so in combination with other efforts, such as socioeconomic preferences and percentage plans.<sup>146</sup> Although UNC says it values academic excellence and diversity, legacy preferences work against both goals. The defense of these practices falls flat.

#### **E. Increasing Recruitment**

In my opening report, I noted that UNC could do a much better job of recruiting socioeconomically disadvantaged applicants, many of whom are underrepresented minorities.<sup>147</sup> In my rebuttal report, I noted the various ways in which Hoxby's and Long's opening reports *bolstered* the case that UNC could do much more to recruit high-ability low-income and underrepresented minority students.<sup>148</sup>

Hoxby's rebuttal report provides further evidence of UNC's failure to recruit low-income and minority applicants. Hoxby finds, for example, that only 4.9% of socioeconomically disadvantaged North Carolina public high school students applied to UNC in 2014-15.<sup>149</sup> She further finds that among high-ability students—defined as those

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<sup>146</sup> Halley Potter, "Transitioning to Race-Neutral Admissions: An Overview of Experiences in States Where Affirmative Action Has Been Banned," in Richard D. Kahlenberg (ed.), *The Future of Affirmative Action: New Paths to Higher Education Diversity after Fisher v. University of Texas* (Century Foundation/Lumina Foundation, 2014), pp. 77-79.

<sup>147</sup> Kahlenberg Report, pp. 57-60.

<sup>148</sup> Kahlenberg Rebuttal Report, pp. 29-34.

<sup>149</sup> Hoxby Rebuttal Report, p. 35. Hoxby is using my definition of disadvantage which includes any student who falls into any of the following categories: first-generation college, applied for a fee waiver, eligible for free and reduced price, reside is a zip code with median income in the lowest one-third nationally, or attend a school that is in the most disadvantaged third in North Carolina (as measured by the proportion of students eligible for subsidized lunch). See Kahlenberg Report, pp. 68-70.

who are in the top 10% of their North Carolina public high school class—only 37.2% applied to UNC in 2014-15.<sup>150</sup> Nationally, Hoxby deserves enormous credit for uncovering the depth of this “undermatch” problem among high-achieving low-income students, and in her rebuttal report, she provides further evidence of the problem at UNC among North Carolina public high school students.

Hoxby’s main response to recruitment as a race-neutral strategy for UNC continues to be that the vast majority of high-ability low-income students nationally are white or Asian.<sup>151</sup> Moreover, Hoxby used a cramped definition of socioeconomic disadvantage that focuses on income and thereby misses the ways in which African-American and Hispanic students are disadvantaged, in the aggregate, by wealth, concentrated neighborhood poverty, school-level poverty, and family structure.<sup>152</sup> But as I noted in my rebuttal report, there is nothing to stop UNC from making special recruitment efforts among the subset of high-achieving low-income students who are also underrepresented minorities—a practice specifically sanctioned by the Supreme Court as a race-neutral strategy.<sup>153</sup> Among North Carolina public high school students, there were 374 high-achieving low-income African-American students and 350 high-achieving low-income Hispanic students in 2014-15 who did not apply to UNC.<sup>154</sup> To put these numbers in context, these non-appliers *exceeded* the

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<sup>150</sup> Hoxby Rebuttal Report, pp. 34-35.

<sup>151</sup> Hoxby Rebuttal Report, p. 73.

<sup>152</sup> See Kahlenberg Report, pp. 22-25; Kahlenberg Rebuttal Report, pp. 5-6.

<sup>153</sup> See Fisher II, 136 S. Ct. at 2213 (describing an effort to intensify “outreach efforts to African-American and Hispanic applicants” as a race-neutral alternative because it does not classify students by race at the admissions).

<sup>154</sup> Kahlenberg Rebuttal Report, pp. 33-34.

total number of African-American (293) and Hispanic (204) students admitted to UNC from North Carolina public high schools during the very same year.<sup>155</sup>

#### **F. Increasing Community College Transfers**

In my opening report, I showed that UNC could increase racial, ethnic, and socioeconomic diversity by increasing transfers from community colleges, because students at such institutions are far more likely to be underrepresented minorities and low-income than students at UNC.<sup>156</sup> I noted that only 5.3% of UNC's incoming class consists of community college transfers, compared with nearly 20% at UC Berkeley, which is at least as selective as UNC.<sup>157</sup>

In his rebuttal report, Chang cites UNC's Carolina Student Transfer Excellence Program (C-STEP) as "one successful program aimed at increasing SES diversity."<sup>158</sup> He does nothing to rebut the point that UNC lags behind competitors such as Berkeley with regard to community college transfers. Remarkably, the words "community college" do not even appear in Long or Hoxby's rebuttal reports.

#### **G. Ending Early Admissions**

In my opening report, I provided evidence showing that UNC could increase its racial and socioeconomic diversity by dropping its early admissions program, which provides a preference in admissions to such applicants and disproportionately benefits wealthy and white students.<sup>159</sup> Institutions such as Harvard, Princeton, and the University of Virginia have experimented with this approach, specifically as a way of increasing socioeconomic and

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<sup>155</sup> Hoxby Rebuttal Report, p. 54 (Exhibit 6).

<sup>156</sup> Kahlenberg Report, pp. 60-62.

<sup>157</sup> Kahlenberg Report, p. 62.

<sup>158</sup> Chang Rebuttal Report, p. 3.

<sup>159</sup> Kahlenberg Report, pp. 62-64.

racial diversity.<sup>160</sup> Nevertheless, in their rebuttal reports, Chang, Long, and Hoxby all fail even to mention the early admissions strategy except in passing.

UNC's experts simply do not grapple with this issue. Chang does not mention early admissions at all. Long claims there is "not a research basis to judge the impact of eliminating Early Action."<sup>161</sup> But this is demonstrably incorrect, given the just-mentioned elite universities that have experimented with eliminating early admission. Hoxby discusses turning off early admissions preferences in simulations but provides no substantive discussion of the topic in her rebuttal report.<sup>162</sup> Instead, she tries to dismiss ending early admissions as a race-neutral strategy by claiming that this preference is "not important as a statistical matter."<sup>163</sup> But this is wrong too, as Arcidiacono demonstrates that early admissions preferences count more than some other preferences employed by UNC, including those for fee-waiver applicants.<sup>164</sup> In short, UNC's experts do not dispute the evidence showing that those applying through early admission are more likely to be accepted and that such applicants are disproportionately wealthy and white—which means that they cannot dispute that eliminating early admission would increase both socioeconomic diversity and racial diversity.

## H. Forming Partnerships with Disadvantaged High Schools

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<sup>160</sup> See, e.g., Alan Finder & Karen W. Arenson, "Harvard Ends Early Admission" (New York Times, September 12, 2006), <http://www.nytimes.com/2006/09/12/education/12harvard.html> (quoting then-Harvard president Derek Bok: "We think this will produce a fairer process, because the existing process has been shown to advantage those who are already advantaged.").

<sup>161</sup> Long Rebuttal Report, pp. 17-18.

<sup>162</sup> See Hoxby, Rebuttal Report, pp. 50 n.111, 53 n.118, and Exhibit 6, n.4.

<sup>163</sup> Hoxby Report, p. 22.

<sup>164</sup> Kahlenberg Report, pp. 33-34.

In my opening report, I noted that several universities have formed partnerships with disadvantaged high schools to boost the pipeline of low-income and underrepresented minority applicants. UNC discussed this route as a race-neutral alternative but chose not to pursue it.<sup>165</sup> In their rebuttal reports, Hoxby, Long, and Chang make no mention whatsoever of this approach.<sup>166</sup>

#### **V. Simulations of UNC's Data Demonstrate That Workable Race-Neutral Alternatives Exist.**

In my opening report, I demonstrated that a number of race-neutral simulations successfully produced the educational benefits of diversity, including Simulation 3 (socioeconomic preference analyzing family and neighborhood factors) and Simulation 5 (an in-state percentage plan).<sup>167</sup> In my rebuttal report, I asked Arcidiacono to conduct an additional exercise (Simulation 6), which included refinements of my earlier models and showed strong results.<sup>168</sup> In my rebuttal report, I also showed that a number of Hoxby's simulations show successful race-neutral alternatives when the results are fully reported.<sup>169</sup> I focused in particular on Hoxby's socioeconomic preference that set aside 750 seats for socioeconomically disadvantaged students from the bottom 20% of the socioeconomic distribution.<sup>170</sup> Likewise, in that report, I demonstrated that Hoxby's "top 5%" high school plan yields the educational benefits of diversity with strong academic preparation once

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<sup>165</sup> Kahlenberg Report, p. 64.

<sup>166</sup> The word "partnership" appears in none of their rebuttal reports.

<sup>167</sup> Kahlenberg Report, pp. 65-79.

<sup>168</sup> Kahlenberg Rebuttal Report, pp. 51-56.

<sup>169</sup> See Kahlenberg Rebuttal Report, p. 44 (discussing eight variations of Hoxby's socioeconomic preferences model).

<sup>170</sup> Kahlenberg Rebuttal Report, pp. 44-47.

corrections were made to Hoxby's reporting.<sup>171</sup> Finally, I noted Hoxby's Census Tract Plan also provided a viable race-neutral alternative.<sup>172</sup>

In her rebuttal report, Hoxby's primary overarching criticism of my opening report's race-neutral simulations is that I focus on actual applicants rather than potential applicants. She said that is a bad approach because there may be additional applicants who are spurred to apply because of new admissions criteria.<sup>173</sup> (Hoxby raises additional objections, which I address below.)

As I noted in my opening and rebuttal reports, there are three main advantages to focusing on applicants, as I did in my opening report, rather than taking Hoxby's approach of constructing a data set using all North Carolina public high school students, whether or not those students applied:<sup>174</sup>

(1) Because Hoxby uses non-applicants in her sample, she is not able to employ the rich set of holistic ratings employed in my simulations (because non-applicants obviously do not have such ratings).<sup>175</sup> As a result, her analysis does not replicate UNC's current admissions policy as closely; she thus misses the nuance available when one considers such factors as personal ratings, extracurricular activities, athletic participation, and the like. (In another context, Hoxby acknowledges that these ratings are very important).<sup>176</sup>

(2) Because Hoxby limits her core simulations to in-state public high school students, she is only able to model results for 64% of matriculates and 32% of

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<sup>171</sup> Kahlenberg Rebuttal Report, pp. 47-50.

<sup>172</sup> Kahlenberg Rebuttal Report, pp. 50-51.

<sup>173</sup> Hoxby Rebuttal Report, pp. 50-55.

<sup>174</sup> Kahlenberg Report, p. 77 n.292.; Kahlenberg Rebuttal Report, pp. 37-38.

<sup>175</sup> Hoxby Report, p. 46. See also Hoxby Rebuttal Report, p. 34.

<sup>176</sup> See Hoxby Rebuttal Report, p. 12 (suggesting Arcidiacono's academic index of SAT and GPA scores is "flawed and misleading" because it "puts no weight whatsoever on such qualities as creativity, grit, leadership, motivation, social and cultural contributions, and so on that are part of the UNC admissions process").

applicants to the freshman class.<sup>177</sup> By contrast, most of my simulations are more complete because they cover the entire entering freshman class.<sup>178</sup>

(3) Because Hoxby includes non-applicants in the sample, she has to make assumptions about which students will actually apply. In her opening report, she assumes 75% will do so based on past experience.<sup>179</sup> But Hoxby herself notes that past experience may not be a good guide because the pool might change depending on which admissions regime is used. A socioeconomic preference, for example, might encourage more low-income students to apply, whereas a percentage plan might encourage more of those at the top of their high school class to apply.<sup>180</sup> On balance, there are strong advantages to focusing on actual applicant data—as UNC expert Long suggests.<sup>181</sup>

Having said all of that, it is important to acknowledge that there is one major advantage to Hoxby's approach of including non-applicants: it implicitly addresses an issue I identified in my opening and rebuttal reports—UNC does a poor job of recruiting high-achieving low-income and minority applicants.<sup>182</sup> If the University were more effective in its efforts to encourage these students to apply, it would have more highly qualified students of all races from which to choose, reducing the need to employ racial preferences.<sup>183</sup>

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<sup>177</sup> See Hoxby Rebuttal Report, p. 48 (82% of matriculates are in-state and 78% of in-state students are from public schools, meaning 64% are in-state public high school students) and Hoxby Report, p. 37 n.80 (32% of UNC applicants attended North Carolina public high schools).

<sup>178</sup> Neither Hoxby nor I include transfer students in our simulations because those data were not made available by UNC.

<sup>179</sup> Hoxby Report, pp. 46 and 78.

<sup>180</sup> Hoxby and Long both acknowledge this possibility. See Hoxby Report, p. 36 and Long Report, p. 10. See also Hoxby Rebuttal Report, p. 5 (regarding “the change in incentives to apply to UNC” with a socioeconomic preference.); Hoxby Rebuttal Report, pp. 32-33; Long Rebuttal Report, p. 18 n.23 (noting that the top 10% plan prompted an increase in applicants from students in the top 10% with a high proportion of minority students). Nevertheless, Hoxby does not adjust the applicant pool for the type of plan employed. Hoxby Report, pp. 46 and 78.

<sup>181</sup> In her review of research, Long supported William Bowen's approach which focused on actual applicants rather Carnevale's approach, which included non-applicants. Long Rebuttal Report, p. 6 n.6.

<sup>182</sup> Kahlenberg Report, pp. 57-60; Kahlenberg Rebuttal Report, pp. 29-34.

<sup>183</sup> Sending a signal that low-income students were especially valued in admissions might result in a particular spike in high achieving low-income students, as Hoxby herself suggests. Hoxby Rebuttal Report, p. 56 (noting that a socioeconomic disadvantage preference will make such students “more likely to apply”). Hoxby's model underplays this phenomenon by assuming that applications will increase across the board.

Given that both approaches—focusing on applicants or including non-applicants—are plausible, it makes sense to model both approaches. UNC itself modeled a percentage plan twice: one that included applicants only, one that included non-applicants.<sup>184</sup>

Between my two reports, I have modeled both approaches. In my rebuttal report, in fact, I built on Hoxby’s model for socioeconomic preferences (which included non-applicants) to show that such an approach could be used to produce the educational benefits of diversity and maintain academic excellence.<sup>185</sup> Hoxby’s critique of my opening report’s focus on applicants thus has already been rebutted.

In her rebuttal report, Hoxby attempts to discredit the findings in my opening report with respect to socioeconomic preferences and percentage plans. I address each in turn below.

**A. Hoxby incorrectly concludes that socioeconomic preferences are not a viable race-neutral alternative at UNC.**

In my opening and rebuttal reports, I include several simulations—including 3, 4, and 6—demonstrating that socioeconomic preferences can produce the educational benefits of diversity among academically well-prepared students. In her rebuttal report, Hoxby makes several criticisms of my simulations, focusing on Simulation 3. Her two major (and related) charges are that (1) it is more appropriate to provide a socioeconomic preference to non-applicants as well as applicants and doing so will result in a large decline in academic

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<sup>184</sup> UNC’s 2012 simulation of a high school percentage plan included applicants only. UNC’s 2014 simulation included non-applicants as well. See Kahlenberg Report, pp. 39-52 and 77 n.292.

<sup>185</sup> Kahlenberg Rebuttal Report, pp. 41-47. In the exercise, I asked Arcidiacono to make a number of improvements to Hoxby’s model, but consideration of non-applicants remained a central feature of the approach.

preparedness of the student body; and (2) my socioeconomic preferences are so large that academic standards will be watered down.<sup>186</sup>

### **1. Including non-applicants in the simulation.**

In her rebuttal report, Hoxby seeks to “correct” my Simulation 3 by defining the applicant pool not only as those North Carolina public high school students who applied to UNC but also all North Carolina public high school students in the NCERDC database.<sup>187</sup> Doing so greatly increases the number of applicants, including high achieving low-income and minority applicants. By reducing UNC’s under-recruitment problem, the simulation increases the chances that race-neutral alternatives will be successful. But in recreating Simulation 3 with non-applicants, Hoxby makes a conceptual mistake. Rather than using a socioeconomic boost of the size necessary to create the educational benefits of diversity, she applies the exact *same* sized socioeconomic preference I used in Simulation 3 with a much smaller pool of applicants.<sup>188</sup> Doing so results not in roughly replicating existing levels of racial diversity—as my Simulation 3 does—but in more than *doubling* the proportion of African-American admits (from 8.5% currently to 19.3%) and greatly increasing the

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<sup>186</sup> Hoxby Rebuttal Report, pp. 47-62. In addition, Hoxby levels a number of additional charges to which Arcidiacono responds in his report. She suggests, among other things, that his model is “overfit” (p. 37); that his model does not fully turn off the race variable (pp. 45, 50, and 53 n.113); that he treats the old SAT and new SAT the same (p. 46); that he makes inappropriate choices in rescaling the size of the simulated class to match the size of the admitted class (p. 55); and that he uses the incorrect variable for schools (p. 69). Arcidiacono responds to all these charges in his report. See generally Arcidiacono Reply Report 10-38. Some of Hoxby’s claims are contradictory. At one point, she says the inclusion of the personal rating could involve race (p. 42); but earlier, she said Arcidiacono’s claim that race infects the personal quality rating “is not warranted” (p. 32).

<sup>187</sup> Simulation 3 provided a socioeconomic preference with a magnitude of 5.0 to students from socioeconomically disadvantaged families (defined as first-generation college, applied for fee waiver, or eligible for free or reduced piece lunch) and an additional preference with a magnitude of 5.0 to students from zip codes with median income in the lowest one-third of the nation. See Kahlenberg Report, pp. 68-69. Unlike the simulations in her opening report, Hoxby appears to assume that 100% rather than 75% of NCERDC students will apply. See Hoxby Rebuttal Report, pp. 59-60.

<sup>188</sup> Hoxby Rebuttal Report, p. 53.

proportion of Hispanic admits (from 5.9% to 9.4%).<sup>189</sup> Hoxby then faults the simulation for resulting in a class “that is dramatically less academically qualified in terms of test scores.”<sup>190</sup> Average SAT scores decline from 1305 to 1136.<sup>191</sup>

First, as a fundamental matter, it is surprising that Hoxby would stop here and disparage this simulation, which quite obviously shows great promise with regard to racial diversity. Any analysis of race-neutral alternatives is an experimental endeavor, and any expert seriously attempting to identify workable race-neutral alternatives would tinker further with a simulation like this to see whether a different version of this simulation would yield positive results with respect to both racial diversity and academic qualifications (as well as socioeconomic diversity). It is disappointing that Hoxby gives up so easily here.

It is especially disappointing because further experimentation with this model yields very favorable results, as I show here. In an attempt to maximize racial and socioeconomic diversity and academic qualifications, I asked Arcidiacono to apply a series of smaller socioeconomic preferences to Hoxby’s large NCERDC pool of applicants and non-applicants.<sup>192</sup> The results for socioeconomic preferences ranging from 0.5 to 2.5 in

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<sup>189</sup> Hoxby Rebuttal Report, p. 54, Exhibit 6. Hoxby reports the raw numbers rather than percentages. The number of African-American admits increases from 293 (out of a class of 3451) to 665 (out of a class of 3442). The number of Hispanic admits increases from 204 to 324.

<sup>190</sup> Hoxby Rebuttal Report, p. 48.

<sup>191</sup> Hoxby Rebuttal Report, p. 54, Exhibit 6. Hoxby also reports an “unscaled” admissions, which would admit a class almost 10 times UNC’s current size (32,529 students) with an even sharper decline in SAT scores to 1025. This reporting has very little relevance to traditional race-neutral analysis, which seeks admitted classes of roughly comparable size to the current class.

<sup>192</sup> A few other adjustments were necessary to make the comparison between the baseline and simulation fair. Hoxby uses UNC data for the baseline status quo results on race, SAT, and high school GPA, and NCERDC data for the simulation results along those same dimensions. This combination of data sets presents challenges because when one matches particular students who are in both data sets, they show, for example, lower high school GPA in the UNC data. See Kahlenberg Rebuttal Report, p. 43 n.178. Accordingly, Arcidiacono adjusted high school GPA downward by 0.063 in the NCERDC simulations. UNC also uses a different way of determining race that results in more students being identified as underrepresented minorities than in the NCERDC data set. In the 2014-15 data sets, when comparing identical “matched” students who are in both the UNC and NCERDC data sets, of 915 African Americans in the UNC dataset, 11.8% are not coded African

magnitude are presented in the appendix. I focus here on the socioeconomic preference of 2.0. for each of the two possible socioeconomic preferences, which I shall call Simulation 7.<sup>193</sup>

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American in the NCERDC data. Likewise, 22.0% of Hispanics in the UNC data set are not coded as Hispanic in the NCERDC data. See Kahlenberg Rebuttal Report, p. 46. The NCERDC data base includes a “multiracial” category, which the UNC data set does not. To make the comparisons accurate, Arcidiacono distributed the “multiracial” students in NCERDC according to a calculation used by Hoxby that splits multiracial into 53% African American, 21% Hispanic, and 13% Asian American.

<sup>193</sup> Because Hoxby’s Exhibit 6 is based on my Simulation 3, there are two possible socioeconomic preferences: for family and for neighborhood. With a 2.0 boost, the total combined preference is 4.0. This compares to the 5.0 socioeconomic preference employed in Simulation 3 for a much smaller pool of applicants for a total possible combined preference of 10.0. For completeness, I asked Arcidiacono to replicate the exercise employed here for Simulation 3 to my other earlier simulations: 4 and 6. The same basic changes were made (include non-applicants and employ a smaller socioeconomic preference). The revised simulations are presented in the appendix as Simulations 10 (revised Simulation 4) and Simulation 11 (revised Simulation 6). There are several viable alternatives presented in these simulations. For example, in Simulation 10, a socioeconomic preference with a magnitude of 1.5 produces an admitted class of 2014-15 that is 10.5% African American, 6.3% Hispanic, and 44.5% socioeconomically disadvantaged at the family level, with an average class SAT of 1278 and high school GPA of 4.82. Likewise, in Simulation 11, a socioeconomic preference with a 1.5 magnitude produces an admitted class for 2014-15 that is 10.4% African American, 6.3% Hispanic, and 44.1% socioeconomically disadvantaged, with an average class SAT of 1279 and high school GPA of 4.82.

UNC – Admitted Class of 2014-15 (North Carolina Public High School Students)			
Status Quo Race-Based Admission		Simulation 7 (Revised Simulation 3 to Include All NCERDC Applicants 2.0 Weight Socioeconomic Preference)	
White	68.4%	White	73.2%
African American	8.5%	African American	9.8%
Hispanic	5.9%	Hispanic	6.1%
Asian American	11.6%	Asian American	9.3%
American Indian	1.9%	American Indian	1.4%
Total Underrepresented Minority	16.3%	Total Underrepresented Minority	17.3%
Missing	3.6%	Missing	--
Family Socioeconomically Disadvantaged	28.5%	Family Socioeconomically Disadvantaged	49.4%
From Socioeconomically Disadvantaged Neighborhood	21.7%	From Socioeconomically Disadvantaged Neighborhood	46.6
From Socioeconomically Disadvantaged High School	7.7%	From Socioeconomically Disadvantaged High School	13.6%
SAT score (percentile)	1305 (90 <sup>nd</sup> )	SAT score (percentile)	1272 (87/88 <sup>th</sup> )
HS GPA weighted	4.73	HS GPA weighted	4.81

Several observations about these results are in order:

First, Simulation 7 shows an increase in racial, ethnic, and socioeconomic diversity. African-American shares rise from 8.5% to 9.8% and Hispanic shares increase from 5.9% to 6.1%, with total underrepresented minority shares increasing from 16.3% to 17.3%.

Socioeconomic “disadvantaged” shares increase significantly, from 28.5% to 49.4%.<sup>194</sup> (Recall, for context, that the North Carolina “disadvantaged” population exceeds 72%).<sup>195</sup>

Second, the simulation shows that Hoxby’s concern about a class “that is dramatically less academically qualified in terms of test scores”<sup>196</sup> is unwarranted. Once the socioeconomic preference is reduced in magnitude to 2.0 (as in Simulation 7), academic preparedness remains strong. Mean SAT scores drop slightly from the 90<sup>th</sup> percentile (1305) to the 87<sup>th</sup>/88<sup>th</sup> percentile (1272), while high school GPA for the class actually increases from 4.73 to 4.81.<sup>197</sup>

In considering these small changes in the academic readiness of the projected class, it is important to recall two points from earlier discussions. First, UNC officials repeatedly testified that they cared more about high school GPA than SAT scores.<sup>198</sup> Second, the modest decline in SAT scores should be considered in light of the greater level of socioeconomic disadvantage present in the class. As UNC officials have themselves recognized, in evaluating the meaning of SAT scores, it is relevant to consider what obstacles a student has had to overcome in order to accurately assess what is most important: “future potential.”<sup>199</sup> Hoxby, herself, acknowledges this point. In considering academic indicators,

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<sup>194</sup> A student is considered “disadvantaged” if he or she is eligible for a fee waiver, for free or reduced-price lunch, or is first-generation college in the UNC data, which describes the status quo. Kahlenberg Report, p. 68. For the simulations, the NCERDC data includes free and reduced-price lunch eligibility. Arcidiacono then uses Hoxby’s methodology for estimating first-generation college status in the NCERDC data in order to make the two estimates for disadvantaged comparable.

<sup>195</sup> More than 72% of North Carolina adults lack a four-year college degree. See Kahlenberg Report, pp. 28-29.

<sup>196</sup> Hoxby Rebuttal Report, p. 48.

<sup>197</sup> For math and verbal composite SAT percentiles, see College Board, “SAT Percentile Ranks for Males, Females and Total Group: 2013 College-Bound Seniors—Critical Reading + Mathematics,” <http://media.collegeboard.com/digitalServices/pdf/research/SAT-Percentile-Ranks-Composite-CR-M-2013.pdf>.

<sup>198</sup> Kahlenberg Report, pp. 46-52.

<sup>199</sup> Kahlenberg Rebuttal Report, pp. 17-18.

Hoxby says, it is surely relevant to consider the fact that a particular applicant “had more challenging childhood circumstances” because admissions officers might value the qualities that enabled that student to “overcome those more challenging circumstances.”<sup>200</sup> In context, then, Simulation 7 produces a class with academic qualifications that are equal to or better than the status quo. Given that Simulation 7 produces better racial and significantly better socioeconomic diversity than the status quo, Hoxby’s work has inadvertently yielded a workable race-neutral alternative.<sup>201</sup>

## **2. The size of the socioeconomic preference**

In a parallel vein, Hoxby suggests my socioeconomic preferences in Simulations 3 and 4 are too large to sustain a strong academic environment at UNC. She tries to illustrate her point using two metrics: the increased likelihood of admissions associated with my socioeconomic preferences, and the value of the preference as measured by SAT test scores.

### *i. Percentage Point Increases in Admissions Chances*

In order to try to make the socioeconomic bumps appear unreasonably large, Hoxby says that a socioeconomically disadvantaged student who has a 21.2% chance of admission without consideration of socioeconomic status would see his or her chances increase to 97.6% from one “Kahlenberg Bump,” to 99.8% for two bumps, and 99.99% for three

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<sup>200</sup> Hoxby Rebuttal Report, p. 13 n.24.

<sup>201</sup> In evaluating socioeconomic preferences, it is also important to note that additional metrics of socioeconomic status would improve the racial dividend. As I noted in my opening and rebuttal reports, more accurate income and wealth data could improve the results. UNC has access to the precise family income of applicants, but I was limited to rough proxies, such as the availability of a fee waiver. These factors can mask considerable income variations. Given large income differences by race in the United States, the lack of precise income data blunted the potential racial dividend of class-based affirmative action. Kahlenberg Report, p. 31. Likewise, UNC has data on the wealth (net worth) of applicants, to which I was denied access. Wealth differences by race are much greater than income differences in the United States; therefore, the use of wealth in admissions could therefore provide a larger racial dividend than other socioeconomic factors. Kahlenberg Report, pp. 22-23. With better SES data, then, UNC could do even better than Simulation 7.

bumps—a net gain of up to 79 percentage points.<sup>202</sup> But this description is highly misleading for four reasons.

First, it is rare for a socioeconomically disadvantaged student, competing against far more advantaged students at UNC, to have a 21.2% chance of admissions without preferential treatment for socioeconomic status.<sup>203</sup> The median admission probability for a socioeconomically disadvantaged student eligible for the family and neighborhood bumps, for example is just 2.7%.<sup>204</sup> Accordingly, the much more relevant admissions boosts are those of the median *disadvantaged* student. Hoxby herself reports those increased chances in a footnote: one bump increases chances of admissions by 6.3 percentage points, and two bumps by 34.5 percentage points. A small number of applicants (257) would be eligible for 3 bumps under a different model (Simulation 4), which translates into a 55.36 percentage point increase in admissions.<sup>205</sup> These preferences are far more modest than the up to 79 percentage point increase that Hoxby highlights in her text.

Second, Hoxby fails to note that the socioeconomic preferences I envision are comparable in magnitude to UNC’s current racial preferences. Hoxby states that my socioeconomic preferences increase a student’s chances of admission from 21.2% to 97.6%-99.99%, depending on the number of socioeconomic bumps provided; using her

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<sup>202</sup> Hoxby Rebuttal Report, p. 51. Under Simulation 3, students are eligible for up to two socioeconomic bumps, one for coming from a socioeconomically disadvantaged family and one for coming from a socioeconomically disadvantaged neighborhood. Under Simulation 4, students are eligible for up to three socioeconomic bumps: one for coming from a socioeconomically disadvantaged family, one for coming from a socioeconomically disadvantaged neighborhood, and one for coming from a socioeconomically disadvantaged school. Kahlenberg Report, pp. 68-70.

<sup>203</sup> Hoxby justifies use of the 21.2% probability of admission because that was the median chance for all students (as opposed to disadvantaged students). Hoxby Rebuttal Report, p. 51.

<sup>204</sup> The median chance for a student eligible only for the family socioeconomic bump is 10.2%. The median chance for a student eligible for the family, neighborhood, and school socioeconomic bumps is 5.5%.

<sup>205</sup> Hoxby Rebuttal Report, p. 51 n.114.

methodology, the racial preference UNC gives African-American applicants increases their chances from 21.2% to 93.8%.

Likewise, as I noted in my opening report, my socioeconomic preference (5.0) is comparable to the size of an out-of-state legacy preference (4.741).<sup>206</sup> Hoxby tries to dismiss this analogy, saying out-of-state legacies are a “small group of students,” akin to “students who could be soloists in the orchestra.”<sup>207</sup> But in the class of 2019, there were 634 out-of-state legacy applicants, of whom 316 were admitted to UNC. UNC would presumably need an enormous orchestra to accommodate 316 soloists. Moreover, the number of students who benefit from my socioeconomic boosts is modest.

Third, the *marginal* boost I suggest for socioeconomically disadvantaged students is even more modest. The 5.0 boost includes as a subset the existing UNC boost of roughly 1.5 for economically and educationally disadvantaged students.<sup>208</sup> The additional bump I propose, therefore is 3.5 in magnitude, not 5.0. Accordingly, the associated boost in chances of admissions falls for 3 bumps from 55.36 percentage points to 45.6 percentage points.

Fourth, it is important to remember that if we follow Hoxby’s preferred methodology, which includes non-applicants as well as applicants in the simulated pool, the socioeconomic preferences required to achieve the educational benefits of diversity are much smaller. In Simulation 7, we recalibrated the socioeconomic preference used in Simulation 3 (5.0 per bump) to 2.0. Because the maximum number of bumps in Simulation 7 is two, no student will receive more than a 4.0 preference. Arcidiacono reports that the

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<sup>206</sup> Kahlenberg Report, p. 68.

<sup>207</sup> Hoxby Rebuttal Report, p. 61.

<sup>208</sup> See Kahlenberg Report, p. 33 (boost for first-generation college students is 1.251 and for fee-waiver students is 0.205 so a student who qualifies for both receives a boost of 1.456).

increased chances of admission for median disadvantaged students receiving one bump based on family socioeconomic status relative to the current UNC socioeconomic preference is just 0.07 percentage points. For two socioeconomic bumps, the marginal increase in chances relative to current UNC socioeconomic preferences is just 4.14 percentage points.

*ii. Equivalent SAT Point Bumps in Admission*

In her rebuttal report, Hoxby tries to suggest that my socioeconomic preferences are also unreasonable when translated into SAT point-equivalent boosts using the math and verbal maximum of 1600 points. She says that in Simulation 3, a student eligible for two preferences—based on family and neighborhood—would see a preference equivalent to over 550 SAT points (on the combined math and verbal tests). A one preference boost (for either disadvantaged family or neighborhood) would be 278 SAT points.<sup>209</sup> Once again, however, there are several problems with her analysis.<sup>210</sup>

First, it is important to note that UNC already provides a modest SAT point-equivalent bump to first generation students—69 points for in-state white applicants and 126 points for out-of-state white applicants, for example. So my socioeconomic boost above

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<sup>209</sup> Hoxby Rebuttal Report, pp. 5 and 58, Exhibit 7. Students are eligible for only up to two bumps in my preferred model, Simulation 3. Hoxby says a student eligible for all three bumps, in Simulation 4, would receive a preference equivalent to 834 SAT points. But this alarming characterization is highly misleading. Under Simulation 4, in the class of 2019 only 25 students eligible for 3 socioeconomic bumps would be admitted with SAT scores below 1000, compared with 5 such students under current admissions. The 20 new students under the simulation represent less than one half of one percent of the 4427 students in the admitted pool. For Simulation 12 which corrects for errors in Simulation 4 (see below), 19 students receiving 3 bumps score below 1000 on the SAT, compared to 3 under the status quo, for a difference of 16 students, or just 0.36% of the admitted class.

<sup>210</sup> In addition to the problems outlined in the text, it is worth noting that, as a general matter, percentage point increases in probabilities of admission are more relevant to the questions at hand than SAT point-equivalent increases because an SAT point increase will matter much more for some students than others. A 200-point increase for a student with a math and verbal score of 750 will take her to 950, still below UNC's general admissions range. A 200-point increase for a student scoring 1150, by contrast, could make an enormous difference in her chances of admission at UNC.

and beyond what UNC already does for in-state disadvantaged students is more on the order of 219 points, not 278.

Second, Hoxby fails to mention that SAT point-equivalent boosts are also large for African-American students under UNC's current system of admissions. Looking at African-American male students who are not first-generation college, Arcidiacono finds that in-state applicants receive a 224 SAT point boost, and out of state applicants a 386 point boost.<sup>211</sup>

In comparing the relative boost provided for socioeconomically disadvantaged students and African-American students, it is important to recall, as I noted in my earlier reports, that there are two reasons to suggest that socioeconomically disadvantaged students should receive larger preferences than African-American students. First, research has found that the obstacles associated with overcoming socioeconomic barriers are eight times greater for socioeconomically disadvantaged students than for African-American students when measured in terms of predicted SAT scores.<sup>212</sup> Second, while research has found that SAT scores over-predict first year college grades for African Americans (meaning such students perform worse, on average, than their SAT scores would predict), for socioeconomically disadvantaged students, there is no over-prediction (that is, on average, they do about as well as their SATs predict).<sup>213</sup>

Third, if we use Hoxby's preferred methodology, and include non-applicants as we did in Simulation 7, the reduction in the socioeconomic preference from 5.0 to 2.0 results in

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<sup>211</sup> Arcidiacono Reply Report, p. 64.

<sup>212</sup> Kahlenberg Report, p. 69 (citing Anthony P. Carnevale & Jeff Strohl, "How Increasing College Access Is Increasing Inequality, and What to Do About It," in Richard D. Kahlenberg (ed.), *Rewarding Strivers: Helping Low-Income Students Succeed in College* (Century Foundation, 2010), p. 170, Table 3.7 (estimating that the SAT scores of socioeconomically disadvantaged students on average are 399 points below socioeconomically advantaged students, while for African-American students, controlling for economic status, the expected score is 56 points lower)).

<sup>213</sup> Kahlenberg Report, pp. 50 n.184 and 69.

a reduction in the SAT point-equivalent boost. Arcidiacono estimates that each socioeconomic bump shrinks to the equivalent of 111 SAT points. A student qualifying for two socioeconomic bumps would receive 222 points, and three bumps would be 333 points.

Whether measured by admissions chances or SAT bumps, the socioeconomic preferences modeled are well-justified for students who have managed to do well despite considerable obstacles. And, as the simulations demonstrate, the academic preparedness of the UNC class remains strong overall.

**B. Hoxby incorrectly rejects the percentage plan.**

In my opening report, I modeled a holistic percentage plan (Simulation 5) that admitted students in the top 4.5% of North Carolina public high school classes. In order to employ UNC's own sophisticated holistic rating system, I limited the simulation to current applicants. The results showed it was possible to achieve the educational benefits of diversity without compromising the academic excellence of the class.<sup>214</sup>

In her rebuttal report, Hoxby advances several critiques of Simulation 5. She suggests that it: (1) contained errors related to the SAT scores reported and the high school variable used; (2) overstated the academic readiness of students because it failed to fill the entire class; and (3) should have included non-applicants, especially since non-applicants in the top 4.5% would have strong incentive to apply under a percentage plan guaranteeing automatic admission.<sup>215</sup> These flaws, she says, renders Simulation 5 "unrealistic and unreliable."<sup>216</sup> I address the first two criticisms in a new simulation, designated Simulation 8.

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<sup>214</sup> Kahlenberg Report, pp. 76-79.

<sup>215</sup> Hoxby Rebuttal Report, pp. 62-69.

<sup>216</sup> Hoxby Rebuttal Report, p. 66.

I address all three criticisms (including the issue of non-applicants) in a model I designate as Simulation 9.

### **1. Reporting of SAT scores and school identification**

Hoxby's first set of criticisms, related to the reporting of SAT scores and the identification of high schools in Simulation 5, are valid; the relevant error is corrected in Simulation 8 presented below.<sup>217</sup>

### **2. Filling vacant seats**

Hoxby's second criticism is that Simulation 5 overstated the academic readiness of students by failing to fill all the seats necessary to replicate the size of the current class. In cases where there were not enough current applicants to fill the high school's top 4.5%

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<sup>217</sup> See Hoxby Rebuttal Report, pp. 67-68 (weighting of SAT scores) and 68 (high school variable). The error in reporting SAT scores does not impact other simulations. The issue of school identification, however, also impacts the socioeconomic preference in Simulations 4 and 6, which employ a school-level socioeconomic preference, and Simulation 5, which applies a percentage plan. The new simulation of the percentage plan (Simulation 8 below) makes a number of changes to Simulation 5, including a correction to the schools' coding. The schools' coding has also been corrected for the revisions to Simulations 4 (new Simulation 10) and Simulation 6 (new Simulation 11), both of which include non-applicants and were discussed above. See appendix. To also correct the schools' coding error while otherwise preserving the original methodology that focuses just on applicants, I also asked Arcidiacono to present the results of Simulations 4 and 6 by correcting the schools' coding error but making no other changes. These are presented as Simulation 12 (revised Simulation 4) and Simulation 13 (revised Simulation 6). See appendix.

The results in Simulation 12 are in virtually all respects similar to Simulation 4 (with the exception of school-level socioeconomic disadvantage. In terms of racial/ethnic diversity, Simulation 12 shows 8.8% African-American and 5.3% Hispanic shares (compared with 8.7% African-American and 5.3% Hispanic in Simulation 4). Socioeconomic disadvantage at the family and school level in Simulation 12 is 34.7% and 28.2%, very similar to Simulation 4 (34.9% and 28.2% respectively). The major difference was socioeconomic disadvantage at the school level, which declined in Simulation 12 to 9.6% compared with 18.8% in Simulation 4. Class average SAT scores and high school GPA in Simulation 12 (1294 and 4.66) were almost identical to Simulation 4 (1293 and 4.66 respectively).

The results in Simulations 13 and Simulation 6 were also very similar in virtually all key respects, again with the exception of school-level socioeconomic disadvantage. In terms of racial/ethnic diversity, Simulation 13 shows 8.8% African-American and 5.3% Hispanic shares (compared with 9.2% African-American and 5.3% Hispanic in Simulation 6). Socioeconomic disadvantage at the family and neighborhood levels in Simulation 13 are 34.3% and 27.8%, very similar to Simulation 6 (35.3% and 28.0% respectively). The major difference was socioeconomic disadvantage at the school level, which declined in Simulation 13 to 9.5% compared with 17.6% in Simulation 6. Class average SAT scores and high school GPA in Simulation 13 (1294 and 4.66) were similar to Simulation 6 (1290 and 4.65, respectively).

allocation, Simulation 5 leaves the seats vacant.<sup>218</sup> As a result, the simulated class was 3,741 students compared with 4,427 admitted students under the status quo—roughly 15% smaller.<sup>219</sup> This is a fair point, and in order to match the class sizes more closely, I asked Arcidiacono in Simulation 8 to fill vacant seats with the top remaining students using what is akin to an academic index focused on academic factors such as grades and test scores.<sup>220</sup>

This method—in which roughly 30% of seats are filled outside of the percentage plan approach—is consistent with the UT’s top 10% plan which fills 25% of seats through discretionary admissions rather than the percentage plan. (The difference, of course, is that my Simulation 8 does not use racial preferences in filling the 30% of seats.)

The results of Simulation 8—a top 4.5% plan filling all seats and correcting errors on SAT scores and school identification—are presented below.<sup>221</sup> (See appendix for full details.)

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<sup>218</sup> Under the simulation, each school is allocated a certain number of seats based on total number of seniors multiplied by 4.5%. Those allocated seats are then filled with the “best” UNC applicants from a particular high school, based on UNC’s holistic admissions process and system of rating students. In some high schools, not enough students applied to fill the high school’s allotment and those seats were left unfilled in Simulation 5.

<sup>219</sup> Hoxby Rebuttal Report, p. 68. Once the school identification error is rectified in Simulation 5, the number of vacancies rises from 15% to 30%.

<sup>220</sup> The simulation focuses on academic factors by using Arcidiacono’s Model 4, which turns off all the preferences—for race, socioeconomic status, legacy, etc. This focus on academic factors is similar in effect to Hoxby’s own modeling of the Allen Plan, where Hoxby takes students from each Census tract with the highest SAT scores and high school grades. See Hoxby Report, p. 85.

<sup>221</sup> For SAT percentiles, see College Board, SAT Percentile Ranks for Males, Females, and Total Group: 2013 College-Bound Seniors—Critical Reading + Mathematics, <http://media.collegeboard.com/digitalServices/pdf/research/SAT-Percentile-Ranks-Composite-CR-M-2013.pdf>.

<p style="text-align: center;"><b>UNC – Admitted Class of 2014-15</b>  <b>(North Carolina High School Students)</b></p>			
Status Quo Race-Based Admissions		Simulation 8 Top 4.5% Class Rank Race-Neutral Admissions (modified from Simulation 5)	
White	69%	White	69%
African American	9%	African American	10%
Hispanic	5%	Hispanic	5%
Asian American	11%	Asian American	11%
Native American	2%	Native American	1%
Missing	4%	Missing	3%
Socioeconomically Disadvantaged Family	24.8%	Socioeconomically Disadvantaged Family	30.4%
Socioeconomically Disadvantaged Neighborhood	19.6%	Socioeconomically Disadvantaged Neighborhood	23.2%
Socioeconomically Disadvantaged School	6.3%	Socioeconomically Disadvantaged School	10.5%
SAT score (percentile)	1311 (90 <sup>th</sup> /91 <sup>st</sup> )	SAT score (percentile)	1280 (88 <sup>th</sup> )
HS GPA weighted	4.67	HS GPA weighted	4.61

The results from Simulation 8 show that the top 4.5% plan yields higher levels of racial, ethnic, and socioeconomic diversity. The share of African-American students rises from 9% to 10% and the share of Hispanic students holds steady at 5%. Socioeconomic diversity increases, as the share of socioeconomically disadvantaged students rises from 24.8% to 30.4%. The shares from socioeconomically disadvantaged neighborhoods and schools also increases.

Academic preparedness remains very strong. SAT scores decline only about two percentile points, while high school weighted GPA changes only 6 one-hundredths of a point. As noted earlier, the strong academic preparedness is remarkable given the increased share of students who have had to overcome economic obstacles.

### **3. Including non-applicants**

Hoxby's third criticism is that I limit Simulation 5 to current applicants. She argues that under a percentage plan system, those applicants who are in the top 4.5% of the high school class but do not now apply will change their behavior under the new system.<sup>222</sup> Hoxby assumes (without providing evidence), that the best students within the top 4.5% are already applying, and that those in the top 4.5% who don't apply are weaker.<sup>223</sup> This is an odd assumption for an individual who is famously known for identifying thousands of low-income high achieving students who in fact under-match in the current system. Nevertheless, she alleges, "It is *crucial* to the Kahlenberg Top plan that no applicants newly made eligible by their class rank apply."<sup>224</sup>

As noted earlier, however, the decision to limit the simulation to current applicants was based not on an effort to skew the results one way or another but on the sound belief that focusing on current applicants, about whom we have a great deal of data, would make for a higher-quality simulation. Rather than simply using a single factor such as high school class rank to simulate a percentage plan, a model involving current applicants allows one to replicate as closely as possible UNC's current holistic admissions system that uses test

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<sup>222</sup> Hoxby Rebuttal Report, p. 34.

<sup>223</sup> Hoxby Rebuttal Report, pp. 34-35 and 65.

<sup>224</sup> Hoxby Rebuttal Report, p. 62.

scores, high school grades, program rating, performance rating, extracurricular activities, essay rating and personal quality.

Nevertheless, given Hoxby's objections, my new model (which I call Simulation 9) takes her approach and includes non-applicants from the NCERDC database. I asked Arcidiacono to use Hoxby's model to simulate a race-neutral high school top percent plan similar to one used by UT whereby three quarters of seats are filled with students who rank highest in their high school class and one-quarter are admitted outside of that process. In the model, roughly three quarters of the slots that currently go to North Carolina public high school students at UNC would be filled with the top ranked students at North Carolina public high schools using the NCERDC data (and including current applicants and non-applicants). The remaining quarter of the class would be filled with the top students under a model Hoxby uses in her Exhibit 6 to predict admissions for non-applicants (after turning off racial and socioeconomic preferences).<sup>225</sup> In essence, this process admits students with top academic index scores for one quarter of the class. I asked Arcidiacono to roughly match the current size of the admitted class from North Carolina public high schools (3451 students).<sup>226</sup> In order to reach an admitted class of the desired size, Arcidiacono employed a top 4.0% model. The results of Simulation 9 are reported below.<sup>227</sup>

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<sup>225</sup> In this model, Hoxby uses Arcidiacono's admissions model 2 modified to apply to NCERDC data.

<sup>226</sup> See Hoxby Rebuttal Report, p. 54, Exhibit 6 (listing 3,451 students in the status quo for 2014-15 admitted class). Because Hoxby raised concerns that a smaller admitted class would artificially skew academic preparedness upwards, I asked Arcidiacono to err on the side of enlarging the class. The simulation admits 3500 students.

<sup>227</sup> The UNC admissions data has 3.6% missing racial data, whereas the NCERDC dataset compiled by Hoxby in this exercise has missing racial data for 0.1% of the data. Under the simulation, because such a small proportion of the NCERDC data had missing racial data, it turned out that not a single student with missing racial data was admitted. Additionally, "Multi-racial" students were allocated according to the methodology employed by Hoxby.

<p style="text-align: center;"><b>UNC – Admitted Class of 2014-15</b>  <b>(North Carolina Public High School Students)</b></p>			
Status Quo Race-Based Admissions		Simulation 9 Top 4.0% Class Rank Race-Neutral Admissions (including non-applicants)	
White	68.4%	White	75.1%
African American	8.5%	African American	8.5%
Hispanic	5.9%	Hispanic	5.3%
Asian American	11.6%	Asian American	10.3%
Native American	1.9%	Native American	0.8%
Missing	3.6%	Missing	--
Socioeconomically Disadvantaged Family	28.5%	Socioeconomically Disadvantaged Family	24.7%
Socioeconomically Disadvantaged Neighborhood	21.7%	Socioeconomically Disadvantaged Neighborhood	21.1%
Socioeconomically Disadvantaged School	7.7%	Socioeconomically Disadvantaged School	13.5%
SAT score (percentile)	1305 (90 <sup>th</sup> )	SAT score (percentile)	1292 (89 <sup>th</sup> /90th <sup>th</sup> )
HS GPA weighted	4.73	HS GPA weighted	4.88

Simulation 9 presents another viable race-neutral alternative for UNC. Racial and ethnic diversity remain strong, with African-American shares holding steady at 8.5% and Hispanic shares doing likewise (5.3% in Simulation 9, compared with 5.9% in the status quo). Socioeconomic diversity also stays steady, decreasing modestly at the family and neighborhood level, but increasing at the school level. SAT scores remain comparable, while high school GPA increases from 4.73 to 4.88.

The positive results in Simulation 9 mirror strong results in an earlier simulation of a percentage plan that included non-applicants. UNC’s 2014 modeling of a top 4.5% plan including non-applicants produced a viable race-neutral alternative on both diversity and academic preparedness dimensions.<sup>228</sup>

In sum, the inclusion of non-applicants in the simulation, which Hoxby predicted would lead to steep declines in academic preparation, does nothing of the kind. Consistent with Hoxby’s own research on high-achieving low-income students, the inclusion of non-applicants in the model allows UNC to reach a strong group of students who can help form a class that brings the educational benefits of racial, ethnic, and socioeconomic diversity while maintaining high standards of academic excellence.

## VI. Conclusion

The Supreme Court has held that colleges such as UNC bear “the ultimate burden of demonstrating, before turning to racial classifications, that available, workable, race-neutral alternatives do not suffice.”<sup>229</sup> UNC has utterly failed meet this standard. To the contrary, several tailor-made simulations show viable alternatives. Among the best are several versions of the socioeconomic preference (Simulations 3, 4, 6, 7, 10, 11, 12, and 13, as well as Hoxby’s 750/20% model); and several versions of the percentage plans (including Simulations 5, 8, and 9, as well as Hoxby’s Top 5% model). These simulations include a mix of those using UNC applicants through holistic admissions and those using potential applicants in the NCERDC data. Taken together, these simulations show that UNC has multiple race-neutral alternatives available to achieve the educational benefits of diversity while maintaining the institution’s high standards of academic excellence.

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<sup>228</sup> See Kahlenberg Report, pp. 42-52.

<sup>229</sup> Fisher I, 133 S. Ct. at 2420.

Dated: June 8, 2018

s/ Richard D. Kahlenberg

Richard D. Kahlenberg

**VII. Appendices**

## Simulation 7: Status Quo

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2360	68.39%	4.75	1316	21.57%	21.36%	5.93%
Asian	401	11.62%	4.78	1349	32.17%	12.72%	4.24%
African American	293	8.49%	4.57	1196	58.02%	30.72%	22.87%
Hispanic	204	5.91%	4.62	1235	62.25%	26.96%	18.63%
American Indian	65	1.88%	4.62	1256	47.69%	43.08%	4.62%
Pacific Islander	4	0.12%	4.91	1266	25.00%	0.00%	0.00%
Missing	124	3.59%	4.77	1350	12.90%	16.13%	1.61%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.73</b>	<b>1305</b>	<b>28.48%</b>	<b>21.68%</b>	<b>7.74%</b>

## Simulation 7: 0.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2706	78.42%	4.83	1312	20.88%	22.70%	6.86%
Asian	360	10.44%	4.91	1372	19.44%	10.07%	5.67%
African American	204	5.91%	4.75	1232	53.29%	31.96%	24.32%
Hispanic	149	4.33%	4.77	1265	55.62%	26.93%	15.79%
American Indian	25	0.74%	4.82	1256	44.23%	37.63%	5.61%
Pacific Islander	5	0.13%	4.64	1300	41.55%	18.80%	17.38%
Missing	1	0.03%	4.62	1276	34.34%	19.21%	11.93%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.83</b>	<b>1311</b>	<b>24.35%</b>	<b>22.21%</b>	<b>8.15%</b>

## Simulation 7: 1.0 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2661	77.10%	4.83	1306	27.39%	29.20%	8.00%
Asian	351	10.17%	4.91	1366	23.71%	13.38%	6.47%
African American	237	6.86%	4.73	1208	64.63%	43.97%	27.15%
Hispanic	167	4.83%	4.76	1247	65.24%	36.87%	18.84%
American Indian	30	0.88%	4.81	1224	57.86%	51.51%	5.95%
Pacific Islander	5	0.13%	4.62	1291	53.37%	29.03%	22.02%
Missing	1	0.04%	4.55	1253	44.15%	27.83%	14.77%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.83</b>	<b>1302</b>	<b>31.70%</b>	<b>29.17%</b>	<b>9.68%</b>

## Simulation 7: 1.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2601	75.37%	4.82	1296	34.98%	36.80%	9.36%
Asian	337	9.78%	4.92	1359	28.74%	17.56%	7.51%
African American	282	8.17%	4.71	1180	74.77%	56.20%	29.72%
Hispanic	187	5.43%	4.74	1225	74.03%	47.38%	22.14%
American Indian	37	1.08%	4.79	1187	70.30%	64.75%	6.09%
Pacific Islander	5	0.14%	4.61	1278	65.18%	40.37%	26.95%
Missing	1	0.04%	4.44	1222	54.96%	38.51%	18.25%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.82</b>	<b>1289</b>	<b>40.17%</b>	<b>37.38%</b>	<b>11.52%</b>

## Simulation 7: 2.0 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2527	73.23%	4.81	1282	43.45%	45.31%	10.89%
Asian	319	9.25%	4.92	1348	34.61%	22.70%	8.84%
African American	340	9.84%	4.68	1151	82.88%	67.25%	31.80%
Hispanic	212	6.13%	4.71	1202	81.49%	57.61%	25.36%
American Indian	47	1.36%	4.76	1150	80.16%	75.67%	6.06%
Pacific Islander	5	0.14%	4.59	1263	75.66%	51.52%	31.71%
Missing	1	0.04%	4.31	1185	65.79%	50.40%	22.15%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.81</b>	<b>1272</b>	<b>49.40%</b>	<b>46.55%</b>	<b>13.60%</b>

## Simulation 7: 2.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2443	70.80%	4.80	1265	52.46%	54.41%	12.52%
Asian	297	8.61%	4.92	1335	41.42%	28.91%	10.47%
African American	407	11.81%	4.65	1123	88.81%	76.29%	33.35%
Hispanic	238	6.90%	4.69	1178	87.42%	66.87%	28.24%
American Indian	58	1.69%	4.72	1118	87.23%	83.79%	5.94%
Pacific Islander	5	0.15%	4.58	1246	84.02%	61.57%	36.03%
Missing	2	0.05%	4.16	1146	75.59%	62.15%	26.11%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.80</b>	<b>1250</b>	<b>58.86%</b>	<b>56.17%</b>	<b>15.80%</b>

Race/Ethnicity	Simulation 8: Status Quo						
	Total Admits	Percent of Class	Avg SAT Score	Avg GPA	SES Family	SES Neighborhood	SES School
White	3064	69%	1321	4.69	0.18	0.19	0.05
African American	383	9%	1198	4.51	0.55	0.29	0.20
Hispanic	240	5%	1249	4.59	0.52	0.24	0.16
Asian	488	11%	1356	4.75	0.29	0.13	0.03
Native American	74	2%	1265	4.59	0.42	0.41	0.04
Pacific Islander	7	0%	1284	4.79	0.43	0.00	0.00
Missing	170	4%	1357	4.70	0.13	0.16	0.01
Total	4427	100%	1311	4.67	24.8%	19.6%	6.3%

Race/Ethnicity	Simulation 8: Top 4.5% Plan						
	Total Admits	Percent of Class	Avg SAT Score	Avg GPA	SES Family	SES Neighborhood	SES School
White	3056	69%	1301	4.65	0.22	0.22	0.07
African American	445	10%	1109	4.29	0.69	0.36	0.33
Hispanic	232	5%	1215	4.47	0.61	0.25	0.23
Asian	474	11%	1328	4.70	0.36	0.17	0.07
Native American	58	1%	1222	4.53	0.52	0.52	0.10
Pacific Islander	8	0%	1277	4.67	0.25	0.00	0.00
Missing	154	3%	1344	4.71	0.18	0.19	0.03
Total	4427	100%	1280	4.61	30.4%	23.2%	10.5%

Simulation 9: Status Quo

Race	Counts	Percent	GPA	SAT	SES Family	SES School	SES Nbrhood
Caucasian	2360	68.39%	4.75	1316	21.57%	5.93%	21.36%
Asian	401	11.62%	4.78	1349	32.17%	4.24%	12.72%
African American	293	8.49%	4.57	1196	58.02%	22.87%	30.72%
Hispanic	204	5.91%	4.62	1235	62.25%	18.63%	26.96%
American Indian	65	1.88%	4.62	1256	47.69%	4.62%	43.08%
Pacific Islander	4	0.12%	4.91	1266	25.00%	0.00%	0.00%
Missing	124	3.59%	4.77	1350	12.90%	1.61%	16.13%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.73</b>	<b>1305</b>	<b>28.48%</b>	<b>7.74%</b>	<b>21.67%</b>

Simulation 9: (75%) Top 4% + (25%) Best Remaining

Race	Counts	Percent	GPA	SAT	SES Family	SES School	SES Nbrhood
Caucasian	2627	75.06%	4.90	1303	18.96%	9.94%	21.39%
Asian	361	10.31%	4.97	1364	20.03%	8.61%	9.96%
African American	298	8.51%	4.66	1157	58.21%	41.77%	28.84%
Hispanic	184	5.26%	4.72	1205	58.59%	27.34%	26.14%
American Indian	27	0.76%	4.78	1239	33.54%	22.17%	21.73%
Pacific Islander	4	0.10%	4.69	1312	69.85%	34.72%	34.30%
<b>Total</b>	<b>3500</b>	<b>100.00%</b>	<b>4.88</b>	<b>1292</b>	<b>24.66%</b>	<b>13.54%</b>	<b>21.11%</b>

## Simulation 10: Status Quo

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2360	68.39%	4.75	1316	21.57%	21.36%	8.17%
Asian	401	11.62%	4.78	1349	32.17%	12.72%	5.01%
African American	293	8.49%	4.57	1196	58.02%	30.72%	27.24%
Hispanic	204	5.91%	4.62	1235	62.25%	26.96%	22.75%
American Indian	65	1.88%	4.62	1256	47.69%	43.08%	7.14%
Pacific Islander	4	0.12%	4.91	1266	25.00%	0.00%	0.00%
Missing	124	3.59%	4.77	1350	12.90%	16.13%	2.08%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.73</b>	<b>1305</b>	<b>28.48%</b>	<b>21.68%</b>	<b>10.25%</b>

## Simulation 10: 0.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2691	77.97%	4.83	1311	21.41%	23.28%	8.57%
Asian	358	10.39%	4.91	1371	19.88%	10.37%	6.74%
African American	217	6.29%	4.75	1225	55.35%	33.59%	31.28%
Hispanic	154	4.45%	4.77	1260	57.29%	28.52%	20.54%
American Indian	25	0.73%	4.81	1256	44.52%	37.38%	7.80%
Pacific Islander	5	0.14%	4.63	1297	43.65%	21.27%	23.15%
Missing	1	0.04%	4.60	1270	36.05%	19.99%	15.80%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.83</b>	<b>1310</b>	<b>25.19%</b>	<b>22.92%</b>	<b>10.35%</b>

## Simulation 10: 1.0 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2615	75.77%	4.83	1303	28.84%	30.73%	12.34%
Asian	346	10.01%	4.91	1364	24.95%	14.38%	9.28%
African American	275	7.97%	4.72	1191	68.61%	47.57%	42.84%
Hispanic	180	5.22%	4.74	1233	68.89%	41.06%	30.71%
American Indian	29	0.85%	4.80	1224	58.17%	50.68%	11.29%
Pacific Islander	5	0.15%	4.60	1281	57.76%	34.39%	34.81%
Missing	1	0.04%	4.46	1234	48.59%	30.32%	25.14%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.83</b>	<b>1297</b>	<b>34.01%</b>	<b>31.15%</b>	<b>15.44%</b>

## Simulation 10: 1.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2504	72.56%	4.82	1290	37.71%	39.65%	17.40%
Asian	326	9.45%	4.92	1352	31.27%	19.79%	13.03%
African American	362	10.49%	4.68	1151	79.68%	61.08%	54.59%
Hispanic	217	6.30%	4.71	1199	79.14%	54.24%	42.55%
American Indian	34	1.00%	4.77	1190	70.40%	63.11%	15.39%
Pacific Islander	6	0.16%	4.58	1257	71.08%	48.12%	46.91%
Missing	1	0.04%	4.26	1183	62.60%	43.59%	37.97%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.82</b>	<b>1278</b>	<b>44.50%</b>	<b>41.19%</b>	<b>22.50%</b>

## Simulation 10: 2.0 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2359	68.35%	4.81	1272	47.71%	49.73%	23.79%
Asian	300	8.68%	4.92	1336	39.01%	26.74%	18.21%
African American	480	13.91%	4.63	1109	87.56%	72.15%	64.95%
Hispanic	265	7.67%	4.67	1161	87.01%	66.09%	54.16%
American Indian	40	1.15%	4.74	1157	80.10%	73.35%	19.93%
Pacific Islander	6	0.18%	4.56	1226	81.93%	60.90%	58.26%
Missing	2	0.05%	4.02	1127	75.58%	57.55%	52.13%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.80</b>	<b>1251</b>	<b>55.96%</b>	<b>52.41%</b>	<b>31.38%</b>

## Simulation 10: 2.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2193	63.54%	4.78	1248	58.28%	60.40%	31.30%
Asian	267	7.73%	4.91	1313	48.32%	35.36%	24.98%
African American	620	17.96%	4.58	1070	92.55%	80.17%	73.12%
Hispanic	318	9.22%	4.62	1124	92.37%	75.45%	64.06%
American Indian	44	1.29%	4.70	1127	87.23%	81.14%	24.85%
Pacific Islander	7	0.20%	4.53	1192	89.50%	71.37%	67.69%
Missing	2	0.06%	3.79	1076	85.44%	69.41%	64.54%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.77</b>	<b>1216</b>	<b>67.26%</b>	<b>63.70%</b>	<b>41.35%</b>

## Simulation 11: Status Quo

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2360	68.39%	4.75	1316	21.57%	21.36%	8.17%
Asian	401	11.62%	4.78	1349	32.17%	12.72%	5.01%
African American	293	8.49%	4.57	1196	58.02%	30.72%	27.24%
Hispanic	204	5.91%	4.62	1235	62.25%	26.96%	22.75%
American Indian	65	1.88%	4.62	1256	47.69%	43.08%	7.14%
Pacific Islander	4	0.12%	4.91	1266	25.00%	0.00%	0.00%
Missing	124	3.59%	4.77	1350	12.90%	16.13%	2.08%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.73</b>	<b>1305</b>	<b>28.48%</b>	<b>21.68%</b>	<b>10.25%</b>

## Simulation 11: 0.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2691	77.99%	4.83	1311	21.33%	23.18%	8.47%
Asian	358	10.38%	4.91	1371	19.88%	10.37%	6.68%
African American	217	6.28%	4.75	1225	55.10%	33.40%	30.81%
Hispanic	154	4.45%	4.77	1260	57.02%	28.41%	20.23%
American Indian	25	0.73%	4.81	1257	44.22%	37.43%	7.70%
Pacific Islander	5	0.14%	4.62	1296	43.51%	21.22%	22.83%
Missing	1	0.04%	4.60	1271	35.81%	19.89%	15.61%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.83</b>	<b>1310</b>	<b>25.09%</b>	<b>22.82%</b>	<b>10.22%</b>

## Simulation 11: 1.0 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2617	75.83%	4.83	1303	28.64%	30.47%	12.05%
Asian	345	9.99%	4.91	1363	24.96%	14.35%	9.12%
African American	274	7.93%	4.72	1192	68.16%	47.16%	41.62%
Hispanic	180	5.22%	4.74	1234	68.41%	40.76%	29.79%
American Indian	29	0.84%	4.80	1225	57.71%	50.70%	11.00%
Pacific Islander	5	0.15%	4.60	1279	57.62%	34.48%	33.87%
Missing	1	0.04%	4.47	1237	48.02%	30.05%	24.57%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.83</b>	<b>1298</b>	<b>33.78%</b>	<b>30.90%</b>	<b>15.04%</b>

## Simulation 11: 1.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2509	72.70%	4.82	1291	37.35%	39.17%	16.80%
Asian	325	9.43%	4.92	1352	31.33%	19.72%	12.68%
African American	359	10.40%	4.68	1152	79.16%	60.53%	52.41%
Hispanic	217	6.28%	4.71	1201	78.55%	53.75%	40.75%
American Indian	34	0.99%	4.77	1190	69.97%	63.22%	14.80%
Pacific Islander	6	0.16%	4.57	1252	71.09%	48.61%	44.79%
Missing	1	0.04%	4.28	1188	61.73%	43.09%	36.85%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.82</b>	<b>1279</b>	<b>44.11%</b>	<b>40.73%</b>	<b>21.64%</b>

## Simulation 11: 2.0 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2367	68.60%	4.81	1273	47.14%	48.98%	22.72%
Asian	299	8.66%	4.92	1335	39.15%	26.63%	17.56%
African American	474	13.73%	4.63	1111	87.10%	71.60%	61.78%
Hispanic	264	7.64%	4.67	1164	86.42%	65.50%	51.35%
American Indian	40	1.15%	4.73	1157	79.73%	73.60%	18.87%
Pacific Islander	6	0.18%	4.55	1218	82.11%	61.88%	54.25%
Missing	2	0.05%	4.05	1132	74.65%	56.99%	50.54%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.80</b>	<b>1252</b>	<b>55.39%</b>	<b>51.72%</b>	<b>29.84%</b>

## Simulation 11: 2.5 SES Boost

Race	Counts	Percent	GPA	SAT	SES Family	SES Nbrhood	SES School
Caucasian	2205	63.91%	4.78	1249	57.44%	59.30%	29.62%
Asian	266	7.72%	4.91	1312	48.52%	35.22%	23.88%
African American	609	17.65%	4.59	1072	92.20%	79.73%	69.11%
Hispanic	316	9.17%	4.63	1127	91.83%	74.87%	60.31%
American Indian	44	1.29%	4.68	1126	86.86%	81.51%	23.13%
Pacific Islander	7	0.21%	4.52	1181	89.75%	72.72%	61.42%
Missing	2	0.06%	3.83	1081	84.70%	69.08%	62.78%
<b>Total</b>	<b>3451</b>	<b>100.00%</b>	<b>4.77</b>	<b>1218</b>	<b>66.50%</b>	<b>62.80%</b>	<b>38.95%</b>

	Number of admits							Share of admits						
	2016	2017	2018	2019	2020	2021	Total	2016	2017	2018	2019	2020	2021	Total
Simulation 12: Simulation 4 with new school identification procedure														
White	3 065	3 022	3 173	3 060	-----	-----	12 320	72.4%	68.6%	69.6%	69.1%	-----	-----	69.9%
Black	391	412	412	390	-----	-----	1 605	9.2%	9.4%	9.0%	8.8%	-----	-----	9.1%
Hispanic	195	197	228	236	-----	-----	856	4.6%	4.5%	5.0%	5.3%	-----	-----	4.9%
Asian	462	477	573	503	-----	-----	2 015	10.9%	10.8%	12.6%	11.4%	-----	-----	11.4%
Other/Not available	121	294	170	237	-----	-----	822	2.9%	6.7%	3.7%	5.4%	-----	-----	4.7%
Total	4 234	4 402	4 556	4 426										
Academic variables														
GPA (mean)	4.55	4.59	4.63	4.66										
SAT (mean)	1 282	1 290	1 306	1 294										
Top decile (%)	13.2%	16.0%	20.5%	18.9%										
Top two deciles (%)	29.8%	34.1%	39.1%	37.8%										
SAT <1000	3.1%	1.9%	1.6%	1.5%										
SES variables														
Family level (%)														
Advantaged	64.8%	66.7%	66.8%	65.3%										
Disadvantaged	35.2%	33.3%	33.2%	34.7%										
Neighborhood level (%)														
Advantaged	70.6%	71.4%	73.0%	71.8%										
Disadvantaged	29.4%	28.6%	27.0%	28.2%										
School level (%)														
Advantaged	90.9%	92.0%	92.1%	90.4%										
Disadvantaged	9.1%	8.0%	7.9%	9.6%										
Family Neighborhood and School Level (%)														
Advantaged	95.7%	96.5%	96.2%	96.4%										
Disadvantaged	4.3%	3.5%	3.8%	3.6%										

Sources: MainDataA.csv MainDataB csv MainDataC.csv MainDataD csv UNC0379828.xlsx UNC0379829.xlsx.

	Number of admits							Share of admits						
	2016	2017	2018	2019	2020	2021	Total	2016	2017	2018	2019	2020	2021	Total
Simulation 13: Simulation 6 with new school identification procedure														
White	3 053	3 015	3 175	3 062	-----	-----	12 305	72.1%	68.5%	69.6%	69.2%	-----	-----	69.8%
Black	393	418	407	388	-----	-----	1 606	9.3%	9.5%	8.9%	8.8%	-----	-----	9.1%
Hispanic	196	200	229	234	-----	-----	859	4.6%	4.5%	5.0%	5.3%	-----	-----	4.9%
Asian	471	484	580	508	-----	-----	2 043	11.1%	11.0%	12.7%	11.5%	-----	-----	11.6%
Other/Not available	121	285	169	234	-----	-----	809	2.9%	6.5%	3.7%	5.3%	-----	-----	4.6%
Total	4 234	4 402	4 560	4 426										
Academic variables														
GPA (mean)	4.55	4.59	4.63	4.66										
SAT (mean)	1 282	1 290	1 307	1 294										
Top decile (%)	13.2%	16.0%	20.5%	18.9%										
Top two deciles (%)	29.8%	34.0%	39.1%	37.9%										
SES variables														
Family level (%)														
Advantaged	65.1%	67.1%	67.1%	65.7%										
Disadvantaged	34.9%	32.9%	32.9%	34.3%										
Neighborhood level (%)														
Advantaged	71.1%	71.9%	73.5%	72.2%										
Disadvantaged	28.9%	28.1%	26.5%	27.8%										
School level (%)														
Advantaged	91.1%	92.1%	92.3%	90.5%										
Disadvantaged	8.9%	7.9%	7.7%	9.5%										

Sources: MainDataA.csv MainDataB csv MainDataC.csv MainDataD csv UNC0379828.xlsx UNC0379829.xlsx.